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ABSTRACT

Universe Cycle is one of the units of a K-6 unified science curriculum program. The unit consists of four organizing sub-themes: (1) earth (providing activities on the physical shape of the earth and landform formations; (2) geography (emphasizing map reading skills); (3) universe (exploring the components, processes and future projects for the solar system); and (4) natural environment (addressing ecological concepts and processes). Each sub-theme contains an introductory statement, student activities for lower grades (K-3) and upper primary grades (4-6), and a teacher's copy for each student worksheet. All student worksheets are ready for duplicating. (ML)

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UNIVERSE CYCLE

EARTH

Children rarely appreciate the wonders of the earth until an adult guides their observations. Pointing out different types of landforms to children generates questions on how they were formed. The Plate Tectonics units covers mountain building, but most of the landforms that the children see, are caused by either wind, water or ice erosion. These agents of erosion overprint the earth with their mark. In the lower primary emphasis should be on the physical shape of the earth; in the upper primary discussions should center on how these landforms were created.

LOWER PRIMARY

A. IS THE EARTH SPHERICAL? - How much bigger is the earth than an apple? What everyday objects have the same shape as the earth? How far would you have to travel to the center of the earth? Can you really drill to China from the United States?

B. WHY IS THE EARTH UNIQUE? - What makes the surface of the earth look different than the moon? Do other planets have wind, ice and rain? Could wind and water change our surface?

C. LANDFORMS CREATED BY WATER - How does rain erode the earth? What can move soil? What is a landslide? Does a river have any energy to erode the land? Can oceans erode the beach? Can land under the oceans erode?

UPPER PRIMARY

D. LANDFORMS CREATED BY ICE - What is a glacier? Are icebergs dangerous? How can ice cause erosion? What features can be created by ice? Just because there is no glaciers there today, does that mean it couldn't have been eroded by ice in the past?

E. LANDFORMS CREATED BY WIND - Why do deserts have so much sand? Is the sand created by deserts the same as sand on a beach? What are sand dunes? Can wind move the land?

F. WHY DO WE HAVE MOUNTAINS AND VALLEYS - Do the moving continents help create mountains? What happens when you push a piece of paper together? Does wind, ice and water reshape the earth?

SE 046 346

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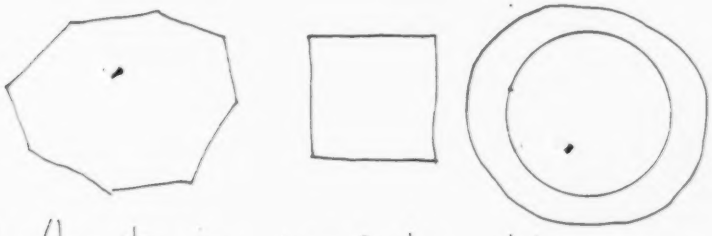
TEACHER SHEET
KINDERGARTEN - EARTH

This exercise is just to look at the shape of the earth. Most children know that the earth is spherical, but ask them why do they think it is round. Clues that early people used was when ships approached the horizon gradually. Now-a-days most children have seen pictures of earth from space...and that is their evidence.

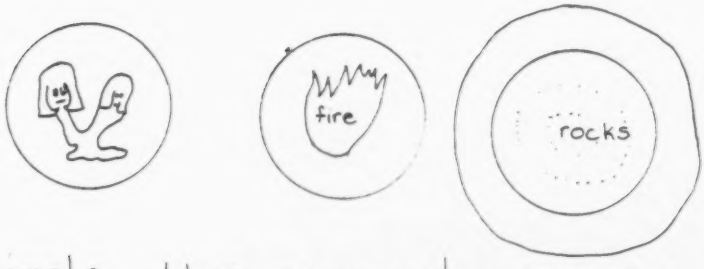
When you ask the children what is inside the earth, their evidence is more difficult to observe. It is more by elimination that they arrive at "rocks" then fire or the two headed monster.

name _____

What is the shape of the earth ?



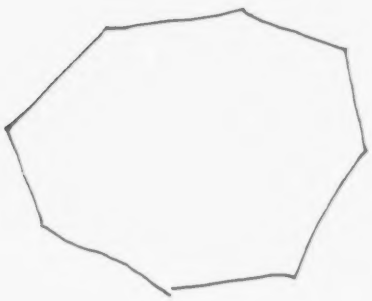
What is inside the earth?

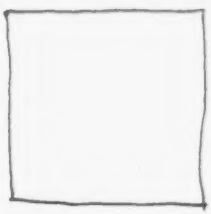


circle the correct answer

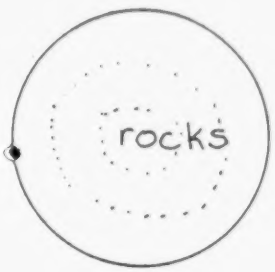
name _____

What is the shape of the earth?





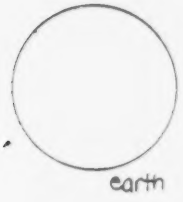
What is inside the earth?



circle the correct answer

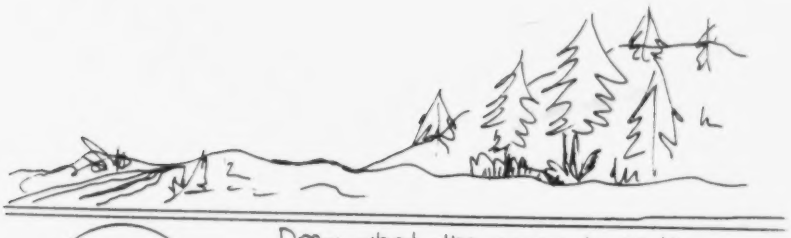
TEACHER SHEET
FIRST GRADE - EARTH

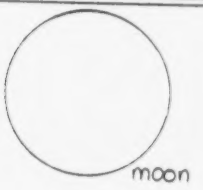
Key points in this exercise is to distinguish a landscape created by water. The earth's landscape is not only created by wind, as most other planets are, but ice and water also play a very important part.



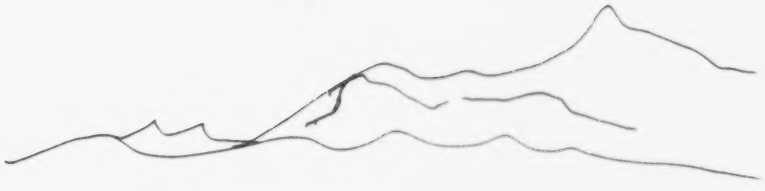
name _____

Draw what the earth looks like from the moon. Draw a scene from earth.





Draw what the moon looks like from the earth. Draw a scene from the moon.



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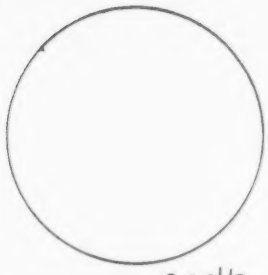
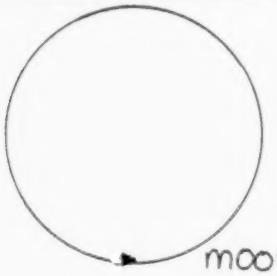


earth

Draw what the earth looks like from the moon. Draw a scene from earth.



moon

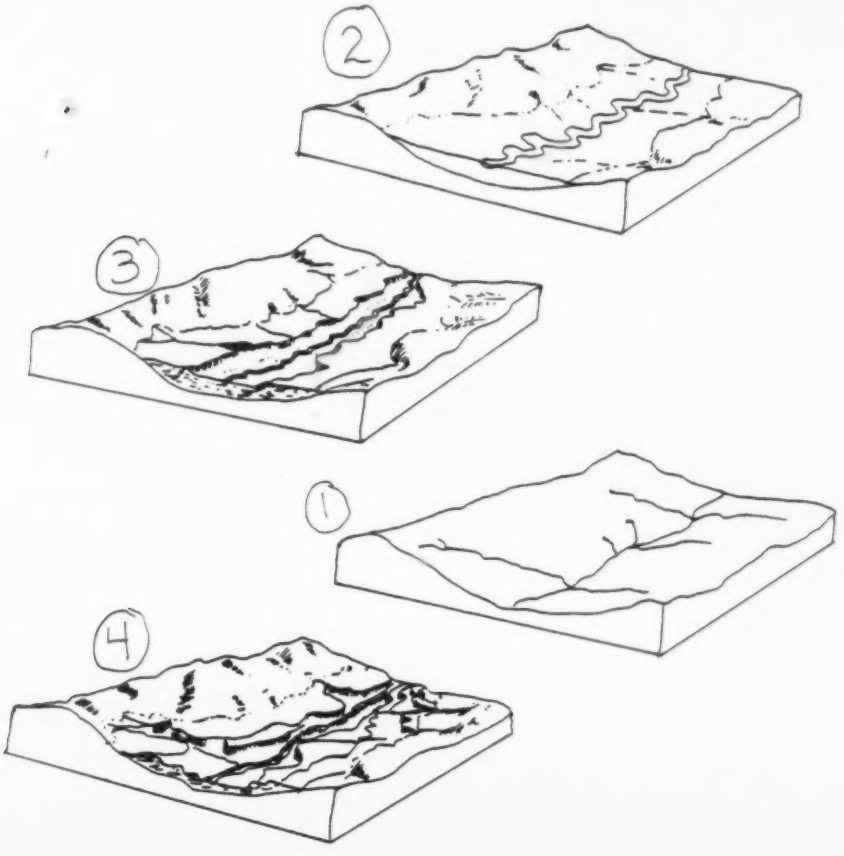
Draw what the moon looks like from the earth. Draw a scene from the moon.

TEACHER SHEET
SECOND GRADE - EARTH

Erosion progresses by steps. In this exercise the river cuts into the landscape to create different scenes. Normally a river will start its cutting first, then it will progressively become steeper. However, if it erodes all the surrounding high rocks away it will become a very old river, like the Mississippi (its not called Old Man River for nothing). This exercise only illustrates when the river is still actively eroding the landscape.

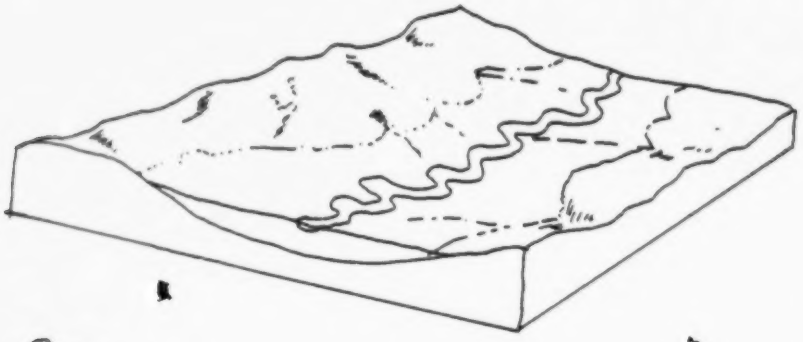
name _____

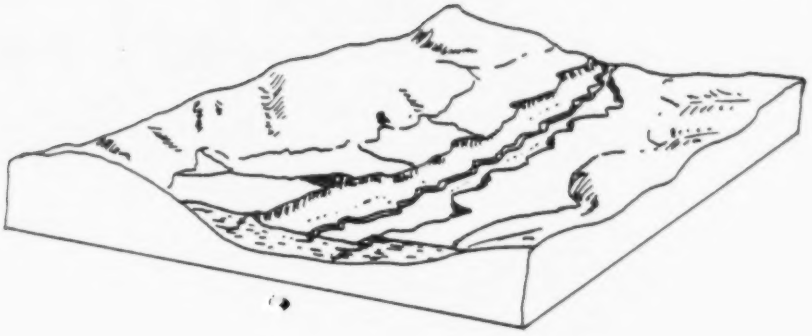
The river is eroding the landscape
Color these pictures of how the river cut into the earth. Cut them out and put them in the order: (1) early river (2) early-middle river (3) late-middle river and (4) late river

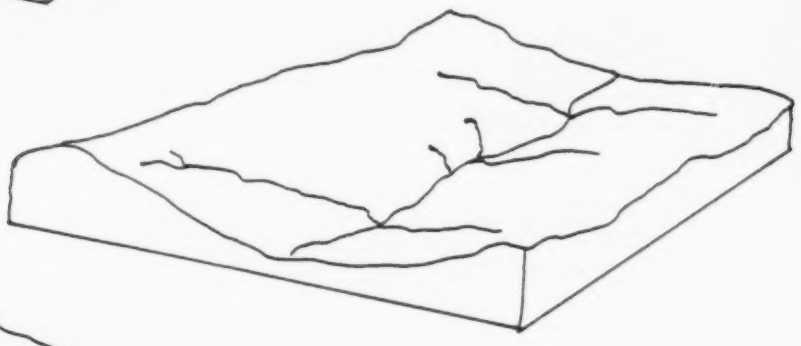


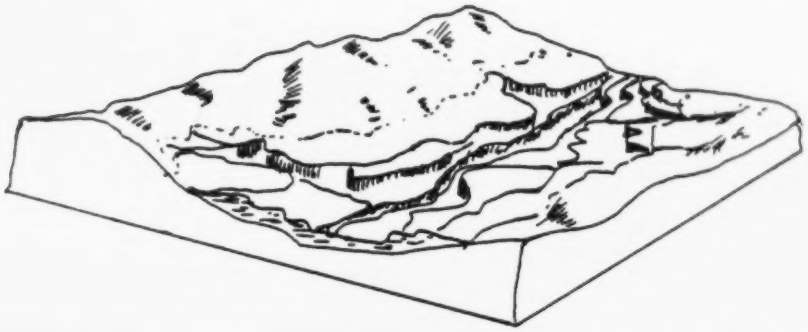
name _____

The river is eroding the landscape.
Color these pictures of how the river cut into the earth. Cut them out and put them in the order: (1) early river (2) early-middle river (3) late-middle river and (4) late river









TEACHER SHEET
THIRD GRADE - EARTH

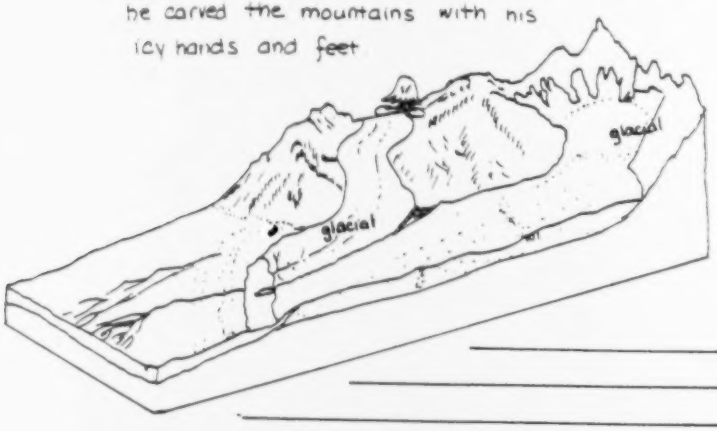
As ice flows, it erodes the surface of the land by abrasion and plucking. Sediment is transported by the glacier and deposited where the ice melts.

Glacial ice forms where more snow accumulates each year than melts. When ice is of sufficient thickness, it flows under its own weight and forms a glacier.

The abominable snowman represents the agent of erosion. Key words that you are looking for in their essay is that the snowman hits and breaks the mountain as it roars down the valley. The snowman is very powerful, but not fast...but don't get in its way or else you will erode too.

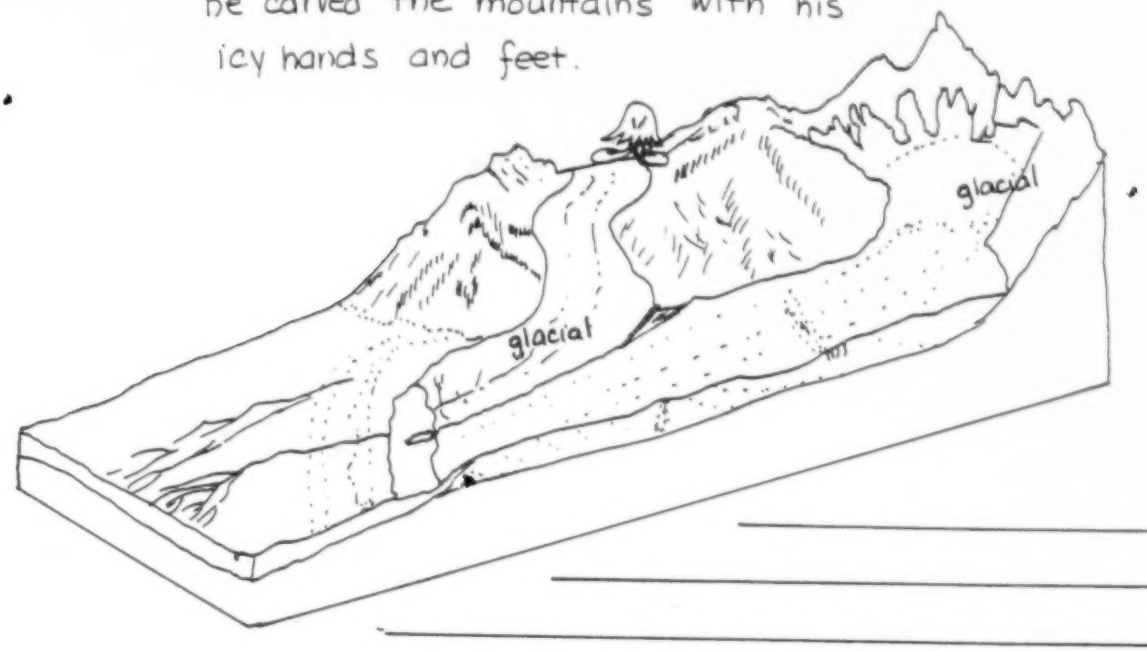
name _____

The abominable snowman controls the glacial in Snowville. Write a story about how he carved the mountains with his icy hands and feet.



name _____

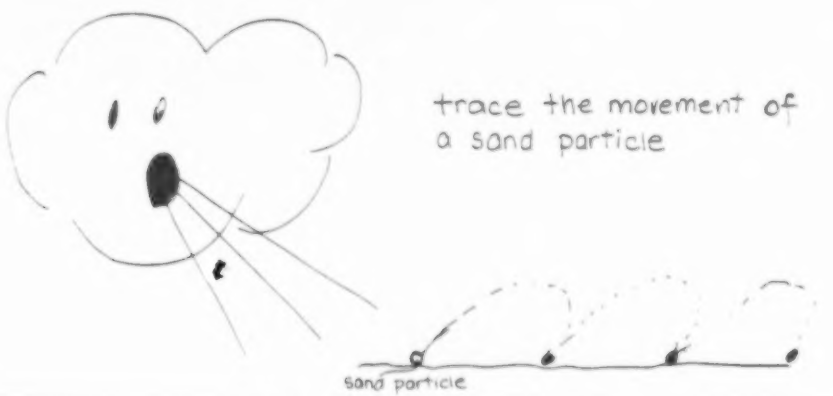
The abominable snowman controls the glacial in Snowville. Write a story about how he carved the mountains with his icy hands and feet.

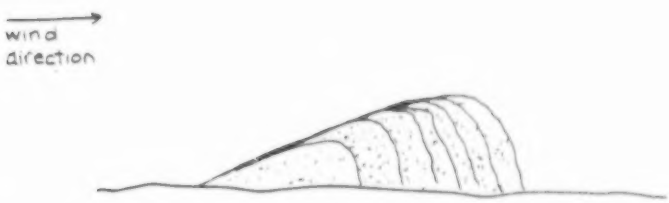


TEACHER SHEET
FOURTH GRADE - EARTH

Wind is not as violent an agent of erosion like ice and water, but over time it can build deserts and finely sculpture some of the landscape. Wind is capable of transporting loose, unconsolidated fragments of sand and dust. Sand is transported by saltation which is the transportation of particles in a current of wind or water by movement through a series of bounces. Sand dunes migrate as sand grains are blow up and over the windward side of the dune and accumulate on the lee slope. The internal structure of a dune consists of strata inclined in a downwind direction.

name _____





Draw what a sand dune looks like.

If the wind isn't blowing, could you have sand dunes? Why? Yes, forms a pattern like above

name _____

trace the movement of a sand particle

sand particle

wind direction →

Draw what a sand dune looks like.

If the wind isn't blowing, could you have sand dunes? Why? _____

_____

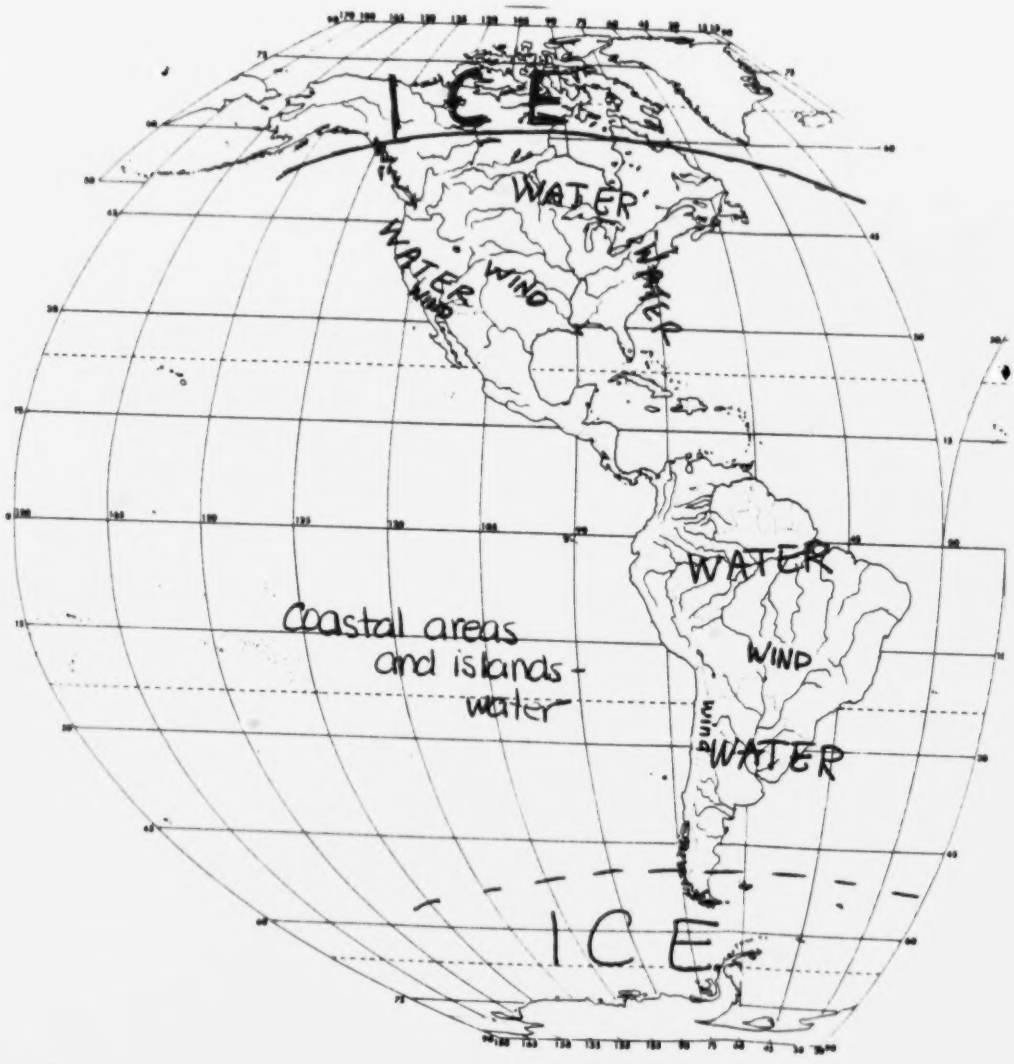
_____

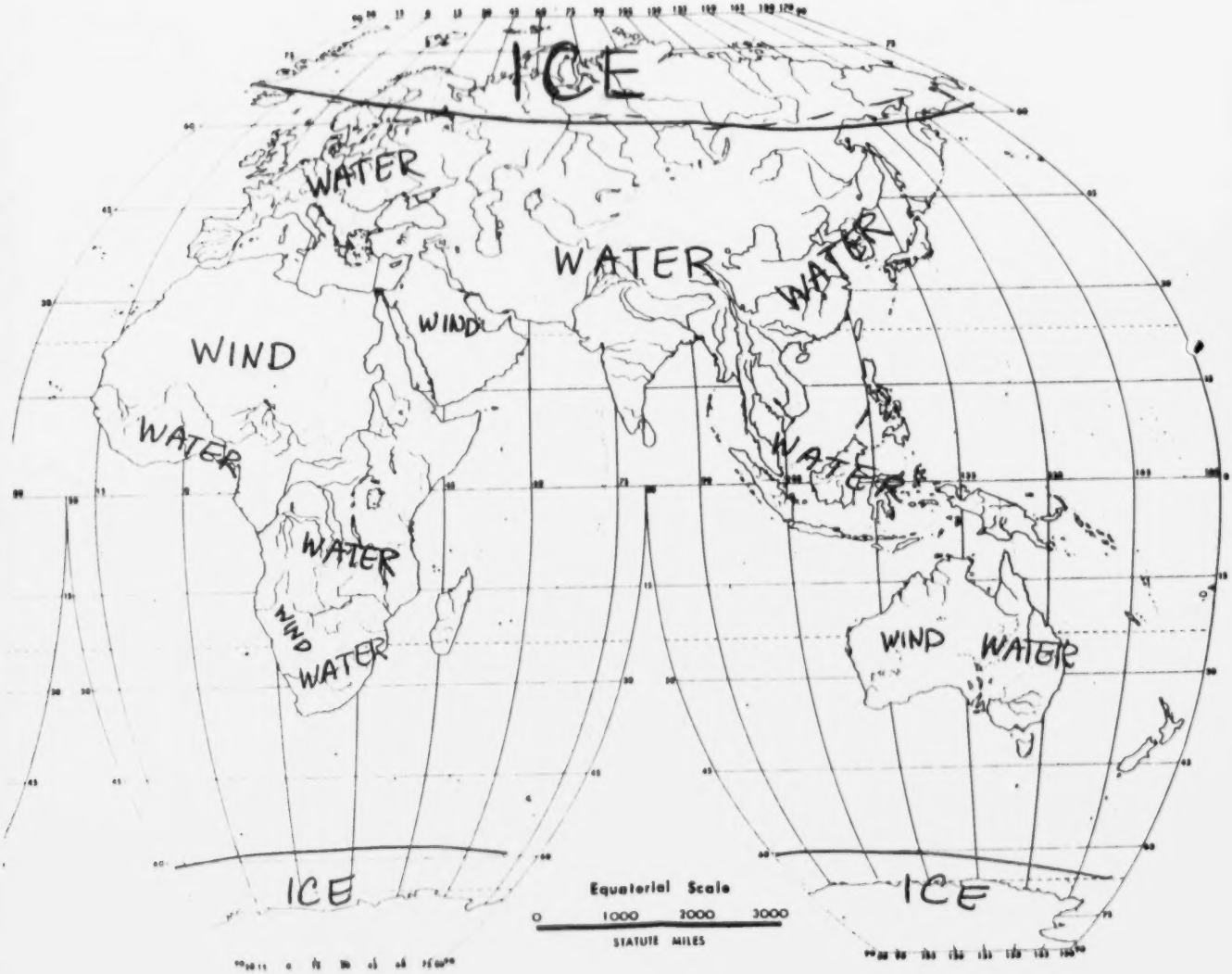
name _____

Color the areas on this map that are affected by water (blue), ice (red), and wind (green). Use the clues given by your teachers.

TEACHER SHEET
FIFTH GRADE - EARTH

Please remember that this is a generalized map of erosion and represents only recent activity.





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name _____

Color the areas on this map that are affected by water (blue), ice (red), and wind (green). Use the clues given by your teachers.

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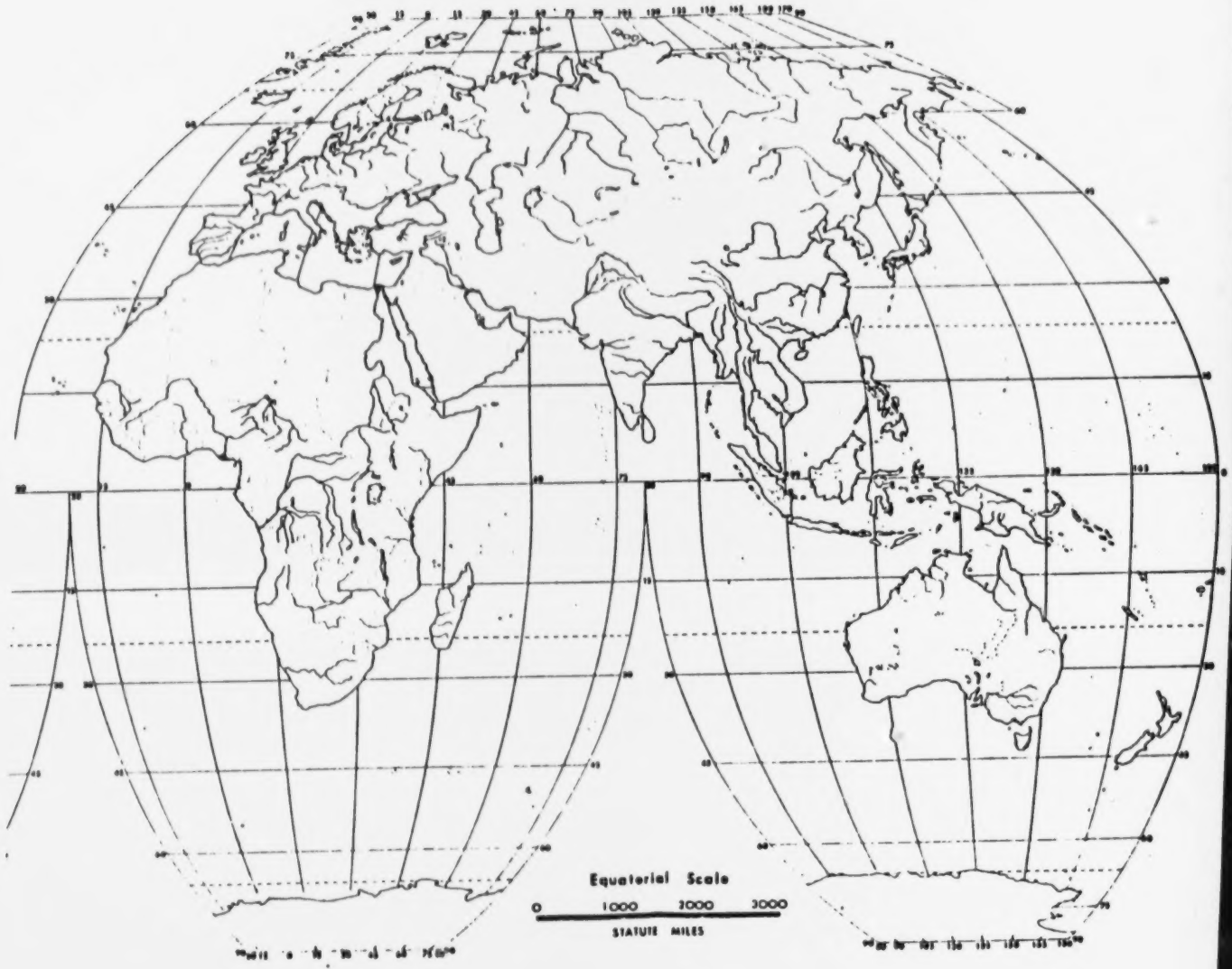


TEACHER SHEET
SIXTH GRADE - EARTH

This exercise illustrates the use of earth descriptions in books. You can use this excerpt from Hawaii to demonstrate the need to education yourself about the earth...because sometimes other than scientists need to understand science.

What ocean is James Michener describing? Pacific

Is this an accurate description of this ocean? Why? yes, basically describes conditions but uses poetic language

What is Michener describing, "Ice piled up along its extremities,...from the 6th paragraph. glaciers

What is this introduction to Hawaii describing? the vastness of the Pacific, the lonelyness - and how with time the earth changes

Define the following words or phrases:

"whipping the waters" (2nd paragraph) white-caps, blowing water

"dark bosom" (2nd paragraph) in its deepness

agitated (3rd paragraph) moved by

tremendous (3rd paragraph) large

universally (3rd paragraph) throughout the universe

turbulent (4th paragraph) violent

eternal (4th paragraph) forever

surges (5th paragraph) large waves

jutted (6th paragraph) sticking out

stupendous (7th paragraph) large

HAWAII

by James A. Michener

Millions upon millions of years ago, when the continents were already formed and the principal features of the earth had been decided, there existed, then as now, one aspect of the world that dwarfed all others. It was a mighty ocean, resting uneasily to the east of the largest continent, a restless every-changing, gigantic body of water that would later be described as pacific.

Over its brooding surface immense winds swept back and forth, whipping tne waters into towering waves that crashed down upon the world's seacoasts, tearing away rocks and eroding the land. In its dark bosom, strange life was beginning to form, minute at first, then gradually of a structure now lost even to memory. Upon its farthest reaches birds with enormous wings came to rest, and then flew on.

Agitated by a moon stronger then than now, immense tides ripped across this tremendous ocean, keeping it in a state of torment. Since no great amounts of sand had yet been built, the waters where they reached shore were universally dark, black as night and fearful.

Scores of millions of years before man had risen from the shores of the ocean to perceive its grandeur and to venture forth upon its turbulent waves, this eternal sea existed, larger than an other of the earth's features, vaster than the sister oceans combined, wild, terrifying in its immensity and imperative in its universal role.

How utterly vast it was! How its surges modified the very balance of the earth! How completely lonely it was, hidden in the darkness of night or burning in the dazzling power of a younger sun than ours.

At recurring intervals the ocean grew cold. Ice piled up along its extremities, and so pulled vast amounts of water from the sea, so that the wandering shoreline of the continents sometimes jutted miles farther out than before. Then for a hundred thousand years, the ceaseless ocean would tear at the exposed shelf of the continents, grinding rocks into sand and incubating new life.

Later, the fantastic accumulations of ice would melt, setting cold waters free to join the heaving ocean and the coasts of the continents would lie submerged. Now the restless energy of the sea deposited upon the ocean bed layers of silt and skeletons and salt. For a million years the ocean would build soil, and then the ice would return; the waters would draw away,; and the land would lie exposed. Winds from the north and south would howl across the empty seas and lash stupendous waves upon the shattering shore. Thus the ocean continued its alternate building and tearing down.

Master of life, guardian of the shorelines, regulator of temperatures and heaving sculptor of mountains, the great ocean existed.

NAME _____

What ocean is James Michener describing? _____

Is this an accurate description of this ocean? Why? _____

_____

What is Michener describing, "Ice piled up along its extremities,...from the 6th paragraph. _____

_____

What is this introduction to Hawaii describing? _____

_____

_____

Define the following words or phrases:

"whipping the waters" (2nd paragraph) _____

_____

"dark bosom" (2nd paragraph) _____

_____

agitated (3rd paragraph) _____

tremendous (3rd paragraph) _____

universally (3rd paragraph) _____

turbulent (4th paragraph) _____

eternal (4th paragraph) _____

surges (5th paragraph) _____

jutted (6th paragraph) _____

stupendous (7th paragraph) _____

UNIVERSE CYCLE

GEOGRAPHY

Geography is not usually considered a science, but the facts that it teaches children, is very important to understand parts of the earth sciences. Learning to read maps and to know where you are is also very useful, especially when you are trying to find a new place. Map reading skills make a very large world look small and understandable.

LOWER PRIMARY

A. WHERE IS LAND AND WATER? - Is land surrounded by water? Can I walk to anywhere in the world? Is water on land? Is there land under the water?

B. WHAT IS A MAP? - Can I make a map of my classroom? Will a map help me find where I want to go? Where is north and south? Where is east and west? Why does a map work?

C. WHERE ARE PLACES IN MY STATE? - Where are the major cities in my state? Where are the rivers? Can I locate the forests and where mountains are? Is my state next to a ocean?

UPPER PRIMARY

D. WHERE ARE PLACES IN MY COUNTRY? - What are the boundaries of my country? Where are the Applachian and Rocky Mountains? Where is the Mississippi River? Where are the major forest in the United States? Are there any deserts? Where are the plains? What major oceans surround the U.S.? What are the major lakes?

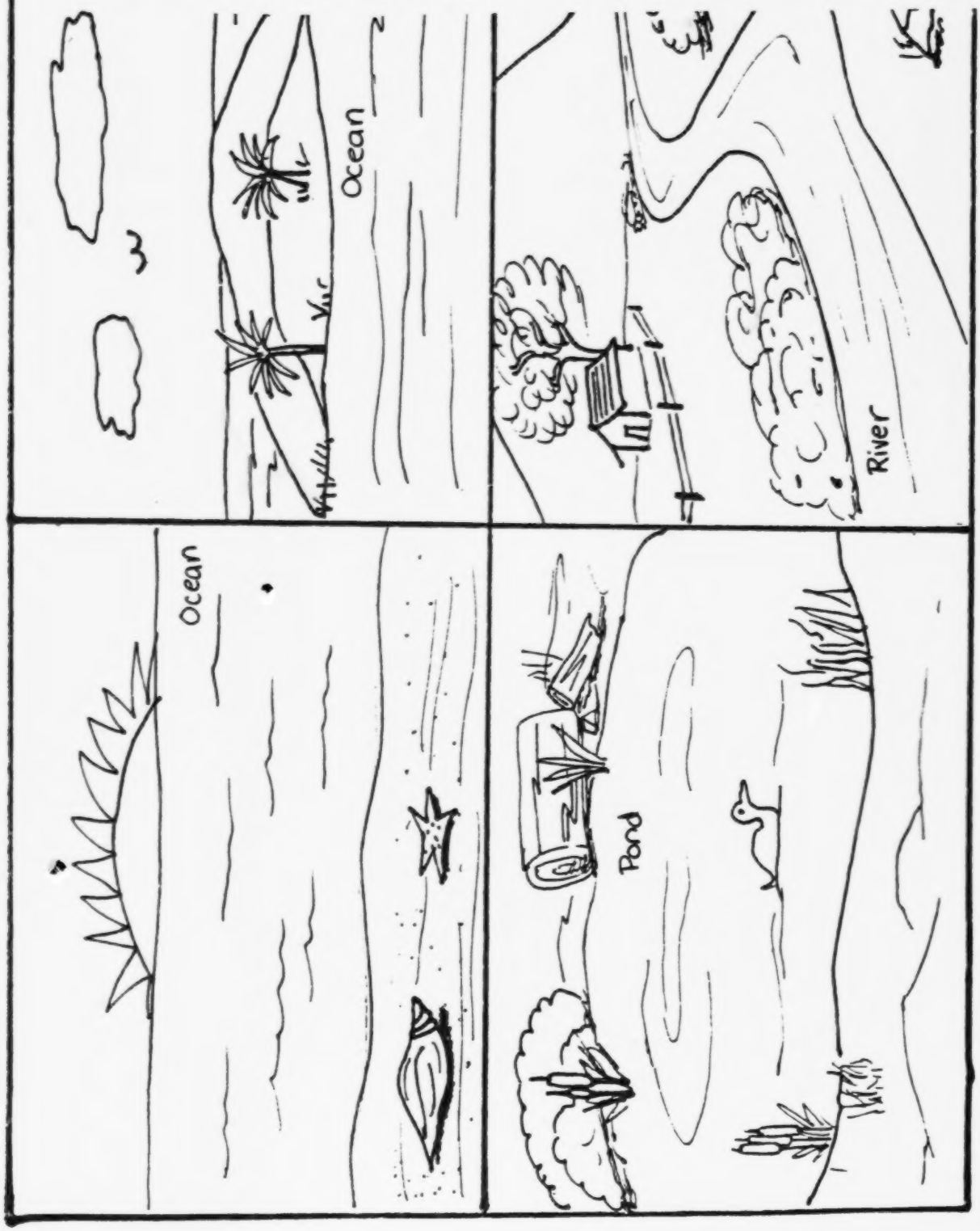
E. WHERE ARE PLACES IN THE WORLD? - How many continents are there? Where are the major rivers? Where are the major oceans? Where are the major lakes? Where are the glaciers and icebergs? Where are the major mountains? Where are the major deserts? Where are the major forests?

F. WHY ARE MAPS IMPORTANT? - Can I live without a map? What is the importance of the following types of maps: road map, navigation map, globe, topographic map and a geologic map? What is a legend? How can I read the scale of a map?

NAME_____

TEACHER SHEET

Children need to recognize that there is a difference between land and water. They also need to learn that water can submerge land, and that under the oceans and lakes there is land. In this exercise have the children color the water blue and the land either brown, tan or green. Note to the children that water can take the form of an ocean, pond or river in this exercise.



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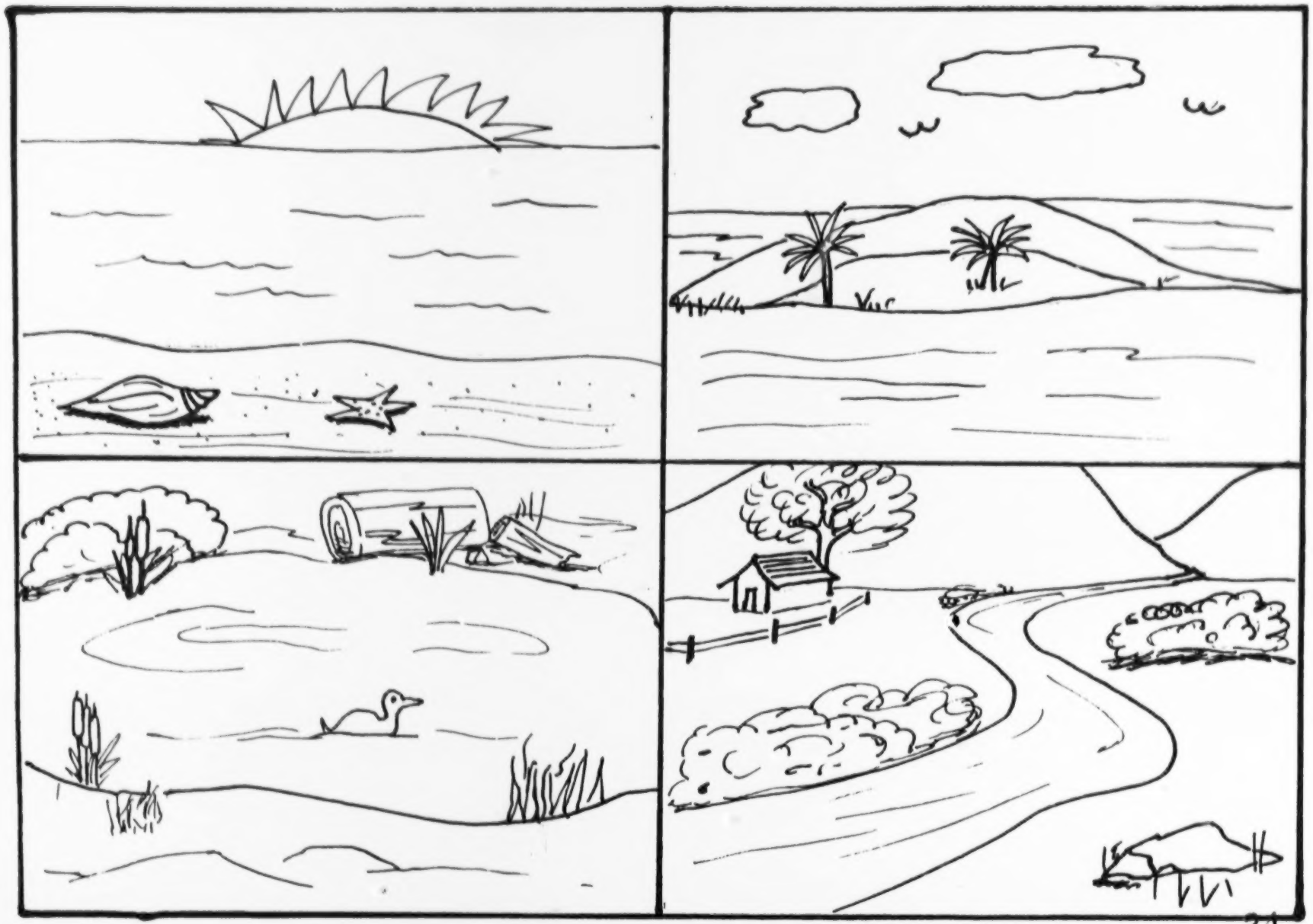


Name_____ · Teacher Sheet

Have students color land mass areas brown and water bodies blue. Purpose is to familiarize students with global representations of the earth.

Color land brown

Color water blue

NAME _____

TEACHER SHEET

MAPS ARE REPRESENTATIONS OF THE EARTH'S SURFACE THEY ARE A WAY OF SHOWING MANY THINGS ABOUT A PORTION OF THE EARTH'S SURFACE ON A FLAT PIECE OF PAPER. BUT A MAP IS NOT A PICTURE OF THE EARTH'S SURFACE; IT CAN SHOW MANY THINGS THAT A PICTURE CANNOT SHOW - THUS MAPS LOOK DIFFERENT IN MANY WAYS FROM A PHOTOGRAPH OF THE EARTH.

FOR THIS EXERCISE, HAVE STUDENTS COMPARE A PHOTOGRAPHY OF THE EARTH TO A WORLD MAP AND ANSWER THE QUESTIONS.

Answer true or false (T= true F= false).

1. A picture shows names of countries. [F]
2. A picture shows the earth as being round or spherical. [T]
3. A map uses symbols to show where things are. [T]
4. A map has latitude and longitude lines. [T]
5. A picture has boundary lines of states and countries. [F]
6. A map has clouds. [F]
7. A map is flat. [T]

NAME _____

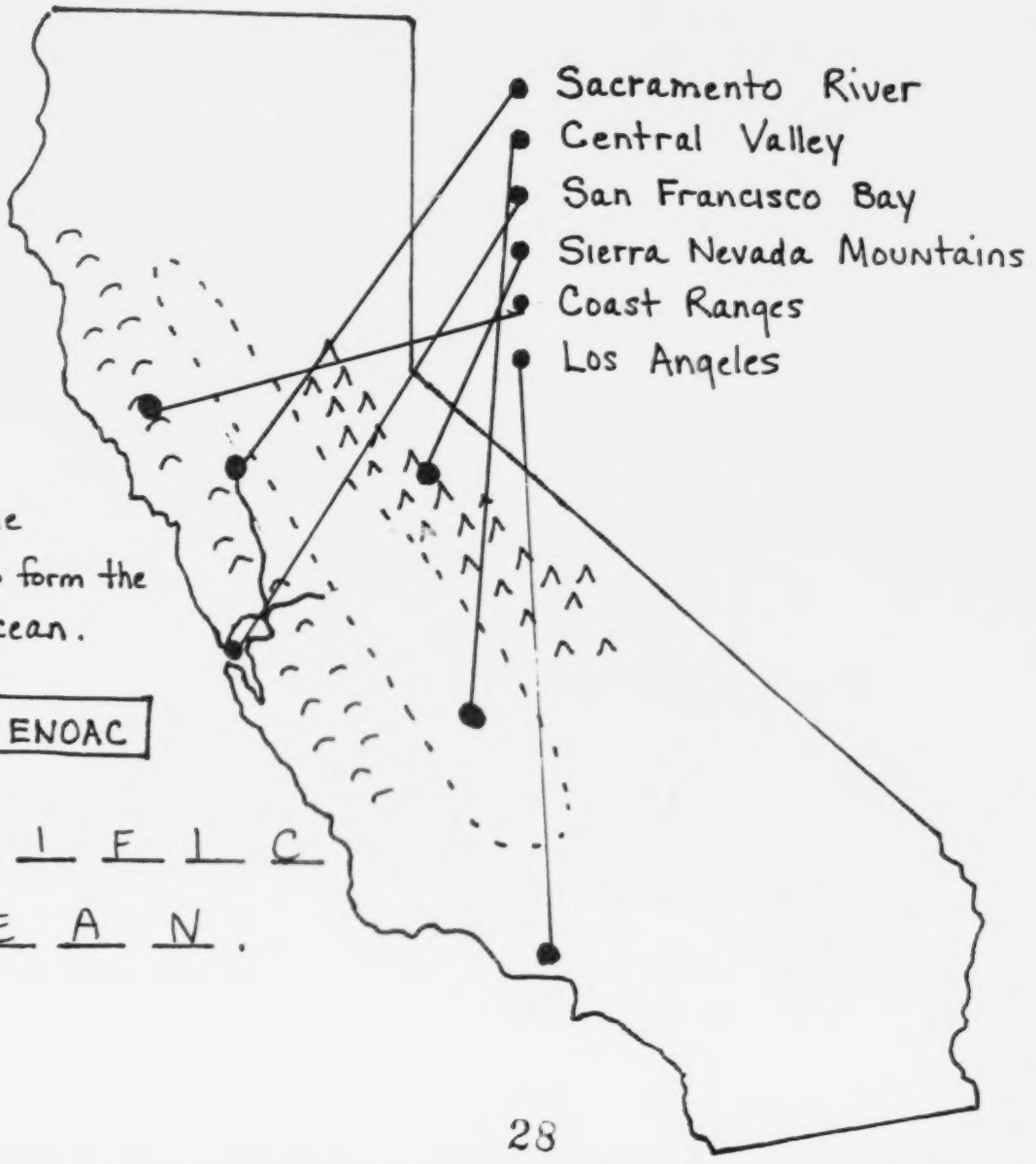
WORLD MAP vs. PICTURE OF EARTH

Answer true or false (T = true F = false).

1. A picture shows names of countries. ☐
2. A picture shows the earth as being round or spherical. ☐
3. A map uses symbols to show where things are. ☐
4. A map has latitude and longitude lines. ☐
5. A picture has boundary lines of states and countries. ☐
6. A map has clouds. ☐
7. A map is flat. ☐

NAME teacher sheet

THE GOLDEN STATE



Unscramble the letters below to form the name of this ocean.

CFIPAIC ENOAC

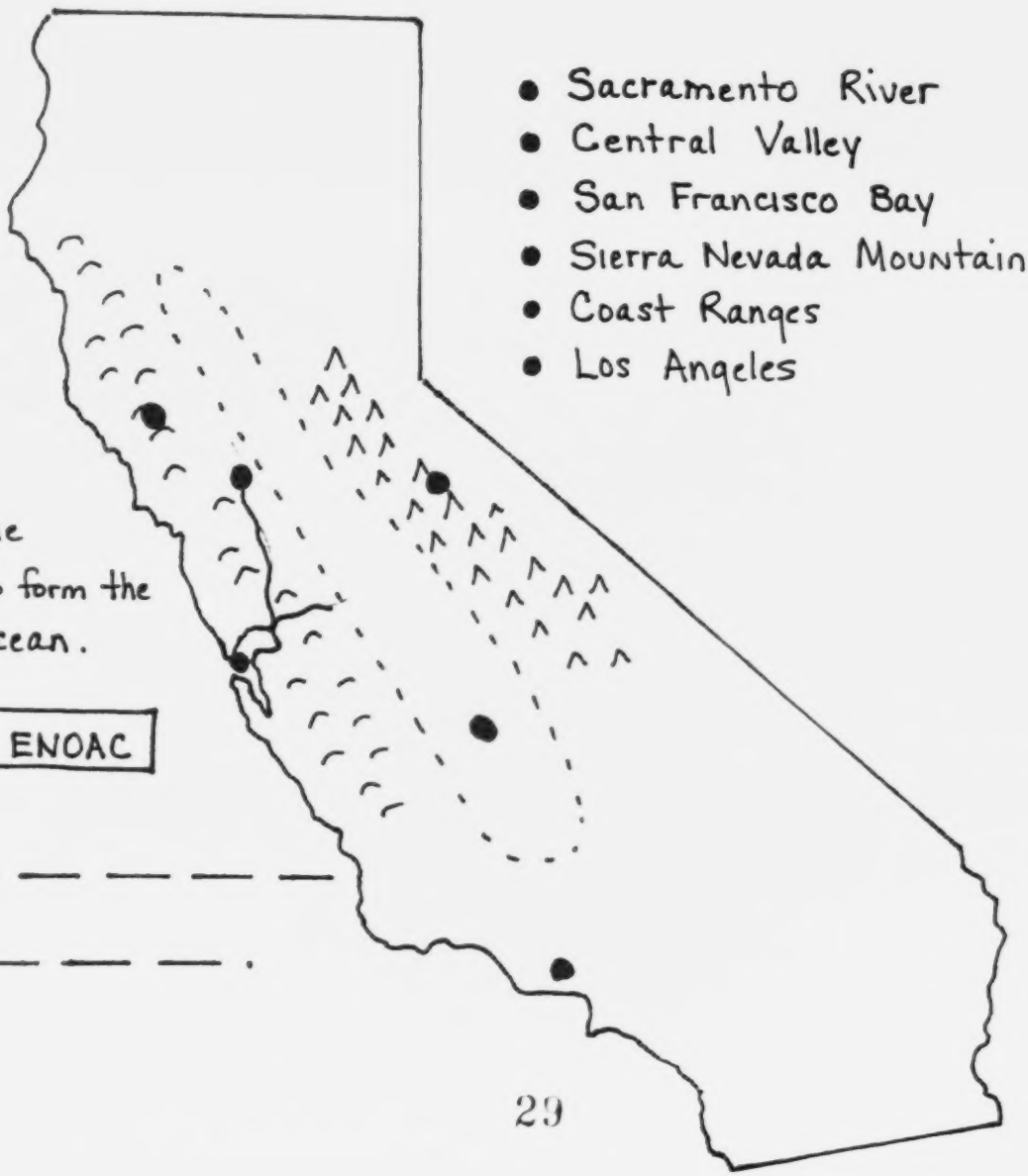
P A C I F I C

O C E A N.

NAME _____

THE GOLDEN STATE

CONNECT THE CORRECT NAME TO EACH FEATURE ON THIS MAP OF CALIFORNIA.



- Sacramento River
- Central Valley
- San Francisco Bay
- Sierra Nevada Mountains
- Coast Ranges
- Los Angeles

unscramble the letters below to form the name of this ocean.

CFIPAIC ENOAC

_ _ _ _ _ _ _

_ _ _ _ _ _ .

name teacher sheet

What state am I?

1. Texas
2. Idaho
3. California
4. Nevada
5. North Carolina
6. Minnesota
7. Florida

name _____

What state am I?

1. 7.
2.
3.
4.
5.
6.

name _____

Whats wrong with this picture of our earth ?

TEACHER SHEET

1. THE MAP IS UPSIDE DOWN
2. INDIA ISN'T ATTACHED TO ASIA
3. AUSTRIALIA IS TOO CLOSE TO ANTARCTICA
4. YOU SHOULDN'T SEE ALL THE LAND MASS ON ONE SIDE OF GLOBE
5. THERE IS TOO MUCH SPACE BETWEEN AFRICA AND EUROPE
6. SOUTH AMERICAN ISN'T CONNECTED TO CENTRAL AMERICA

name _____

Whats wrong with this picture of our earth ?

NAME teacher sheet

1. Susie wants to go to New York and lives in California, what kind of map would she use to find out what states she will cross?

Road map

2. A pilot is going to Russia from San Francisco, how would he find out the shortest route to fly there?

Globe

3. A sailor wants to know how many nautical miles are between Hawaii and San Francisco, what kind of map would he use?

Navigation Map

4. A hiker wants to climb Mt. Whitney in California. What map will tell him how high it is to the top?

Topographic Map

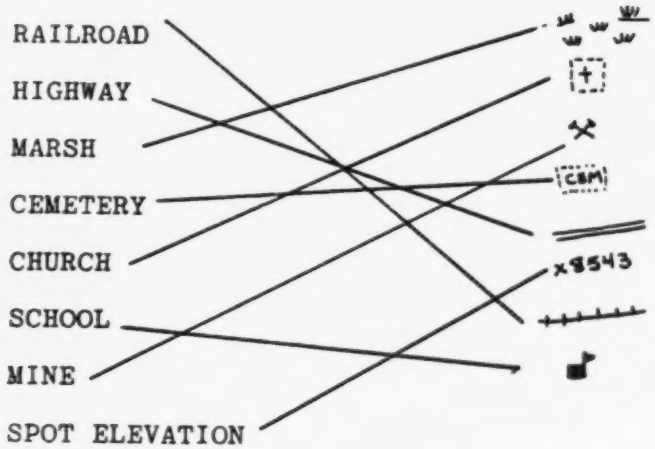
5. A geologist wants to know if there are igneous rocks where they live, what kind of map would they use?

Geologic Map

6. Where on a map can you find a listing of symbols?

Legent

MATCH THE CORRECT SYMBOL WITH ITS NAME



NAME _____

1. Susie wants to go to New York and lives in California, what kind of map would she use to find out what states she will cross?

2. A pilot is going to Russia from San Francisco, how would he find out the shortest route to fly there?

3. A sailor wants to know how many nautical miles are between Hawaii and San Francisco, what kind of map would he use?

4. A hiker wants to climb Mt. Whitney in California. What map will tell him how high it is to the top?

5. A geologist wants to know if there are igneous rocks where they live, what kind of map would they use?

6. Where on a map can you find a listing of symbols?

MATCH THE CORRECT SYMBOL WITH ITS NAME

RAILROAD

HIGHWAY

MARSH

CEMETERY

CHURCH

SCHOOL

MINE

SPOT ELEVATION

MAKING A RELIEF MODEL FROM A TOPOGRAPHIC MAP

Equipment: Rolling pin, wooden board, two pieces of wood, about 1/4-1/2 inch wide about 12 inches long (to keep thickness of clay even), modeling clay with oil mixed in it, a sharp point to cut clay

Procedure: Simplify a topographic map to a contour interval that can be easily seen (see enclosed map of Angel Island in San Francisco Bay). Xerox as many copies as there are intervals. Cut each interval out.

Wet the rolling pin, the utility board and the wooden sticks with water. Place the two sticks on either side of the board, flat side down, so that the rolling pin rides along them as on tracks.

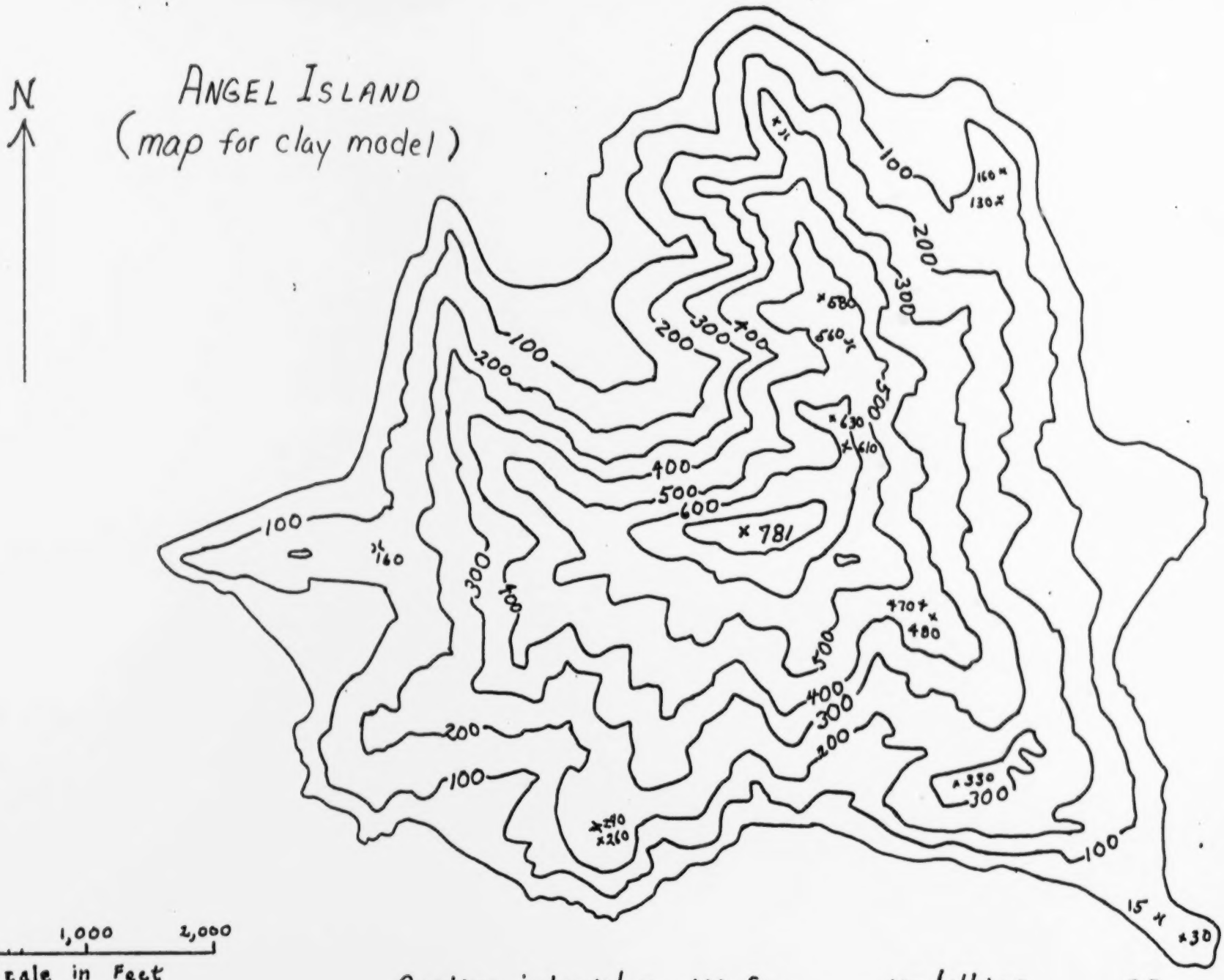
Place clay between the two sticks on the utility board. Roll the pin back and forth over it until the rolling pin rides firmly on the two wooden sticks. Make enough "pancakes" to cut all the interval levels.

Cut out each successive interval until the model is completed. Stack the intervals in the same position as the original map. You now have a step-wise model of topography.

If you wish to make a realistic model with natural and not stepped slopes, smooth areas to make it look like a real slope.

In making a model, the class can be divided into teams of about four people. One person cuts the paper templates, another rolls the layers, the third mounts and cut layers and the fourth assembles the model.

ANGEL ISLAND
(map for clay model)



0 1,000 2,000
Scale in Feet
1" = 1,000'

Contour interval = 100 ft. × = hilltop

UNIVERSE CYCLE

UNIVERSE

Learning about the universe and all its components is a very difficult subject for elementary school students to completely understand. It is almost impossible to understand the overall workings of the universe because most of the evidence that contributes to the theories are based on mathematical and physical theories that make it impossible to simplify. This unit should try and get students to be aware of where we are located in the universe and what other objects are in space. The immense size of the universe and how the earth fits into this space should also be emphasized. Today's students must understand why our country is looking into space as a new frontier. This frontier can be used for communication, defense, mining and possibly for living. This subject can also be used to have the students look into the future, to see if space is where we belong.

LOWER PRIMARY

A. WHAT IS IN THE SKY? - What are the bright objects in the sky? Why does the moon look different? Is the earth special? Is there little aliens living in space?

B. WHAT IS THE SOLAR SYSTEM? - What are stars? What are planets? What are the planets associated with our sun? What is special about each of the planets?

C. DOES THE EARTH MOVE? - What is the axis of the earth? Does the earth rotate? What does the earth revolve around? Can we feel this motion? Do the other planets move? Does the moon move around the earth?

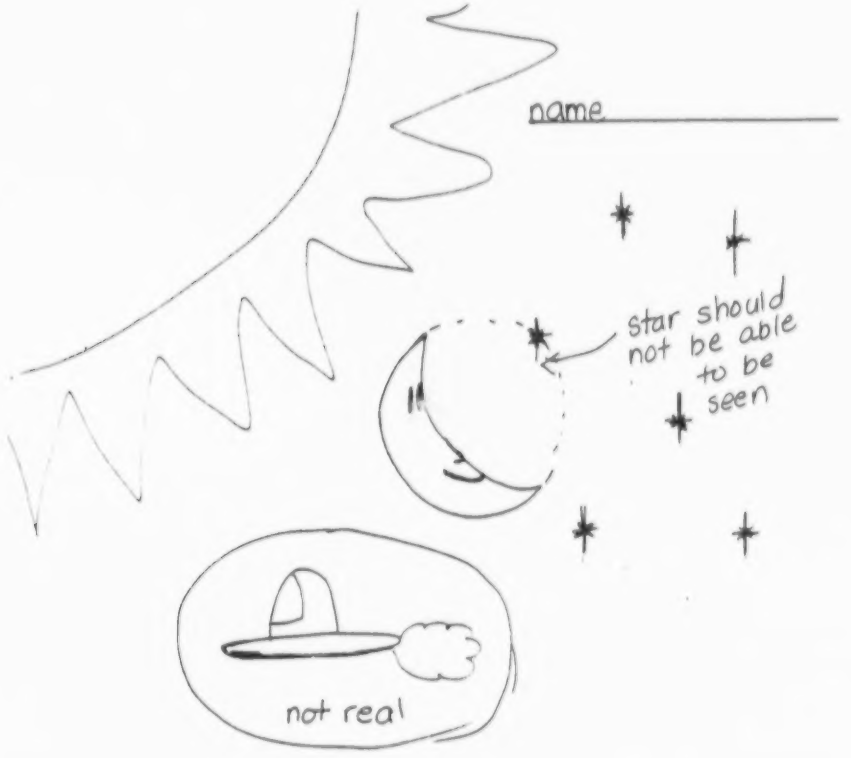
UPPER PRIMARY

D. WHAT IS IN THE UNIVERSE? - What is a planet? What is a galaxy? What is a comet? What is the solar system? What are constellations? What is the Milky Way? What is an asteroid? Where is the earth located?

E. IS THERE A FUTURE IN SPACE? - What is an astronaut? Why do we send satellites into space? What is the space shuttle trying to accomplish? Will we ever live in space? Why is space important?

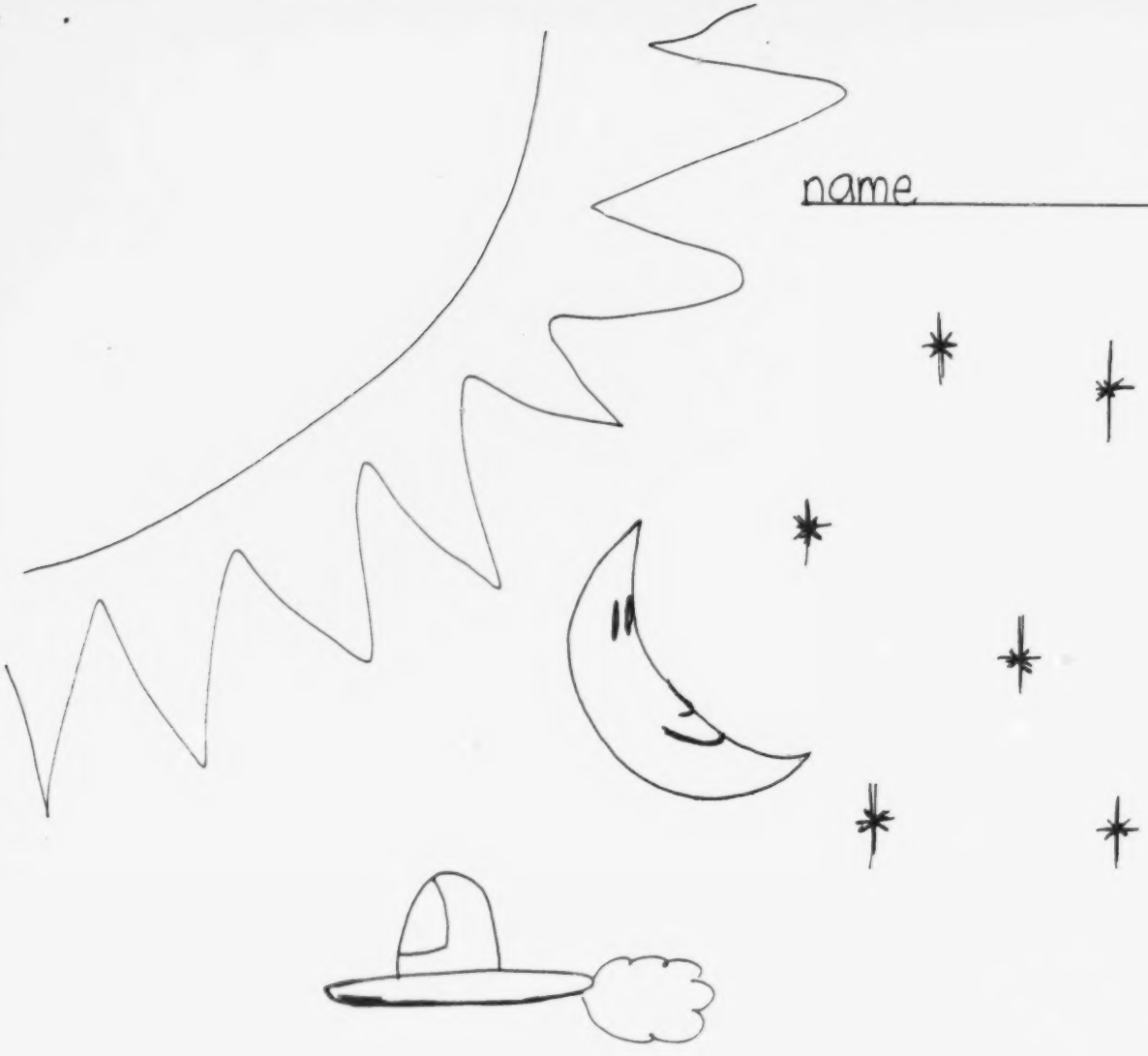
TEACHER SHEET
KINDERGARTEN - UNIVERSE

This coloring exercise is to point out misconceptions that the children may have of the universe. Using this drawing you might want to go over phases or poems that talk about the earth, moon and sun. Ask the children if a cow can jump over the moon, or if the moon is made of cheese or if there is a man in the moon.



What is wrong?

name _____

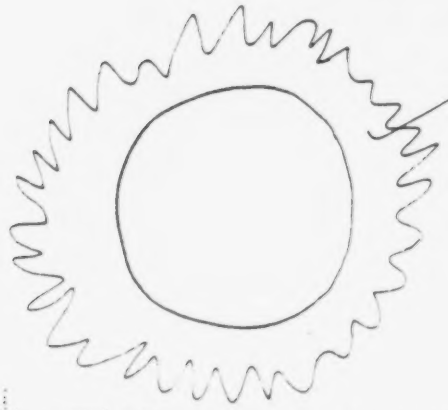


What is wrong?

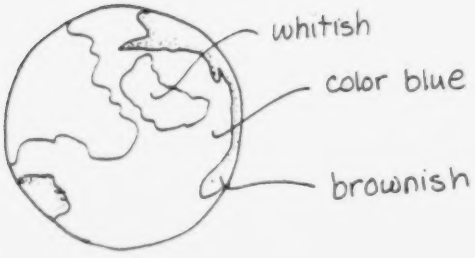
TEACHER SHEET
FIRST GRADE - UNIVERSE

The central players in our solar system are the sun and planets. This coloring and writing exercise emphasizes that the earth is a planet and that our sun is a star.

name _____

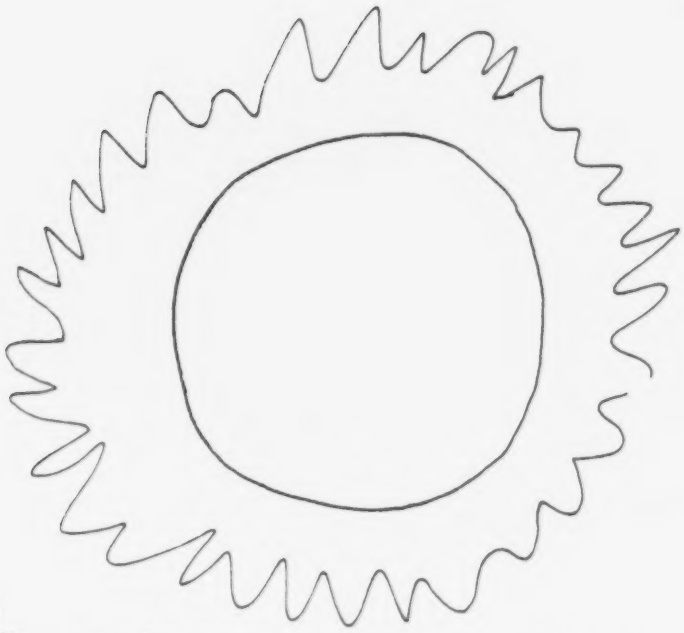


star = sun



planet = earth

name _____



star = sun

planet = earth

TEACHER SHEET
SECOND GRADE - UNIVERSE

This exercise illustrates the different planets. The planets are a good way to learn the memory device of using a silly sentence using the fist letter of the objects you are trying to remember. Any one can work like:

My very earthly mother just served us new pickles.
Must Vera eat my jolly, single, used, nice pea.

You may want to point out the main points of each of the planets.

MERCURY
smallest, swiftest, not much larger than the moon, no atmosphere, diameter 4868 km., greatest temperature extremes of any planet

VENUS
shrouded with thick clouds, rotates clockwise direction (different from other planets), surface temperature 480 degrees, diameter 12,112 km

MARS
volcanic activity, wind erosion, crustal movements (marsquake), diameter 6800 km, two moons

JUPITER
has one ring, 5 moons, revolutes around the sun every 12 years, rotates every 10 hours, diameter 143,000 km

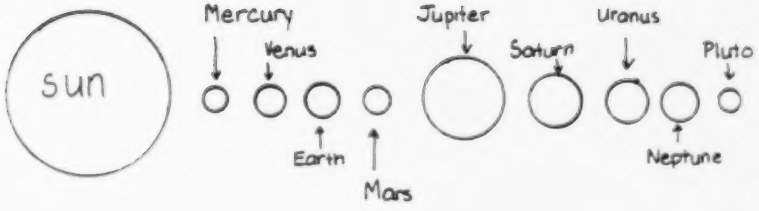
SATURN
11 moons, 3 major rings, temperature -179 degrees centigrade, diameter 121,000 km

URANUS
5 moons, 5 rings, discovered in 1781, diameter 47,000 km

NEPTUNE
2 moons, revolves every 165 years, rotates every 16 hours, diameter 45,000 km

PLUTO
discovered 1930, highly eccentric orbit, revolution 248 years, diamater 6,000 km

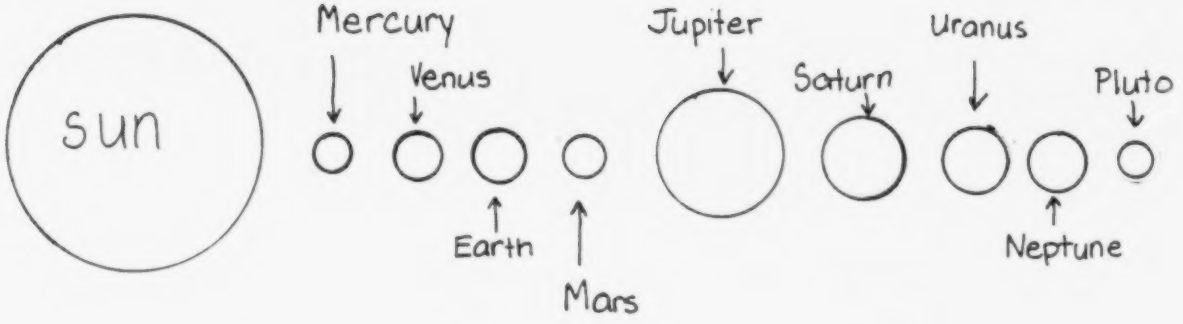
name _____



How can you remember the order of the planets? Use a memory device. Make up a "silly" sentence, using the first letter of each planet.

M My
V very
E earthly
M mother
J just
S served
U us
N new
P pickles.

name _____



How can you remember the order of the planets? Use a memory device. Make up a "silly" sentence, using the first letter of each planet.

M _____
V _____
E _____
M _____
J _____
S _____
U _____
N _____
P _____

TEACHER SHEET
THIRD GRADE - UNIVERSE

This exercise illustrates the difference between revolution and rotation. Revolution is movement around the sun, rotation is around the earth's axis. Also, point out that other planets and their planets also rotate and revolve.

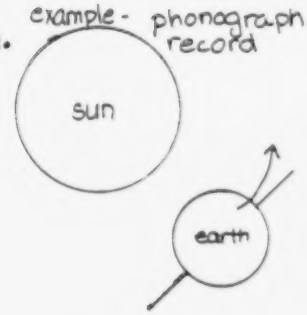
name. _____

How does our earth move?

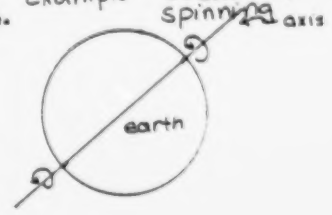
revolve = to orbit a central point
rotate = to turn or spin on an axis

Which is which?

A. example - phonograph record



B. example - basketball spinning



revolve _____ rotate _____

The earth revolves around the sun.

The earth rotates on its axis.

Does the earth rotate and revolve at the same time? yes

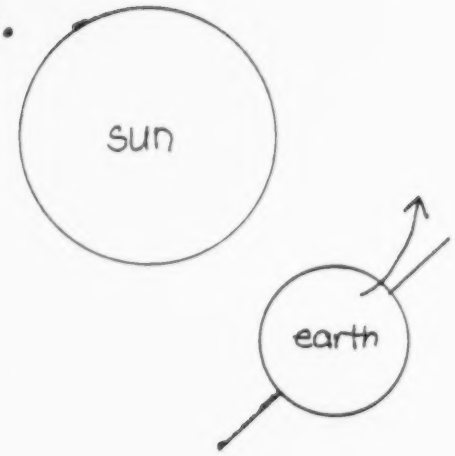
name _____

How does our earth move?

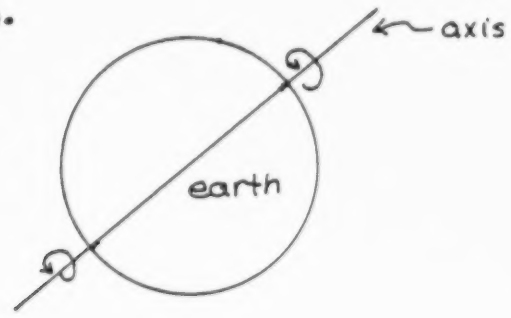
revolve = to orbit a central point
rotate = to turn or spin on an axis

Which is which?

A.



B.



_____ _____

The earth _____ around the sun.

The earth _____ on its axis.

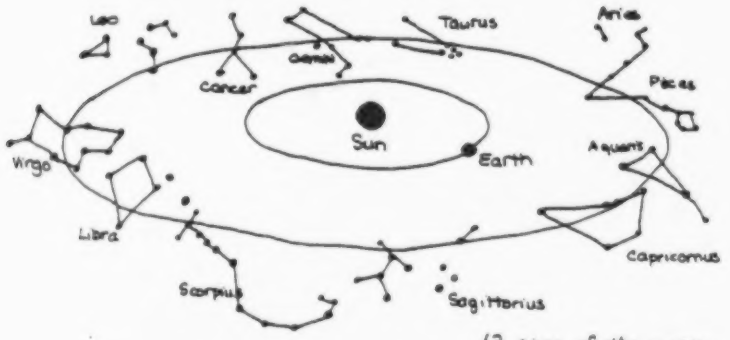
Does the earth rotate and revolve at the same time? _____

TEACHER SHEET
FOURTH GRADE - UNIVERSE

This exercise shows how man has basically created stories about the stars. Just imagine yourself looking up at the sky at night, watching sheep or whatever...you would fantasize about the heavens also. Ancients use to create stories about the heavens, trying to make sense out of the mystery above them. It is certain that the first constellations were named by people living north of the equator, since there is a lion, two bears, several dogs, some sea creatures, a ram, a bull and others; but there was no hippopotamus or elephants.

The zodiac refers to 12 constellations that are about 8 degrees on each side of the ecliptic which is the apparent path of the sun among the stars.

name _____



12 signs of the zodiac

An association or group of stars is called a constellation.

Why do you think ancient people created constellations?

_____

see above

_____

_____

Find out the date of each sign by finding out what the "signs" are of your classmates and match it with their birthdays. Record the information below

sign	dates	sign	dates
Capricornus	Dec 22 - Jan 20	Cancer	June 22 - July 21
Aquaris	Jan. 21 - Feb 19	Leo	July 22 - Aug 21
Pisces	Feb 20 - March 20	Virgo	Aug 22 - Sept 22
Aries	March 21 - April 19	Libra	Sept 23 - Oct 22
Taurus	April 20 - May 20	Scorpius	Oct 23 - Nov 21
Gemini	May 21 - June 21	Sagittarius	Nov 22 - Dec 21

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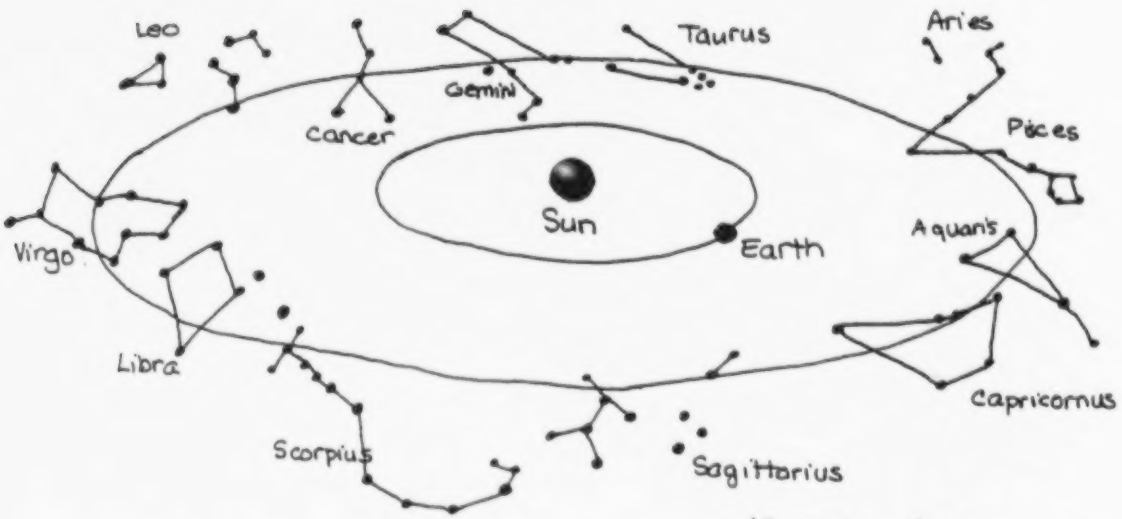
name _____



12 signs of the zodiac

An association or group of stars is called a constellation.
Why do you think ancient people created constellations?

_____

_____

_____

Find out the date of each sign by finding out what the "signs" are of your classmates and match it with their birthdays. Record the information below.

sign	dates	sign	dates

BEST COPY AVAILABLE

TEACHER SHEET
FIFTH GRADE - UNIVERSE

These terms are just to familiarize students with the vastness of the universe. These terms are used so frequently on television and radio, but you always wonder if people really know what they refer to.

Name _____

Define these terms:

planet - A "wanderer"; one of nine bodies in orbit around the sun

star - A self-luminous nearly spherical mass of gas

galaxy - collection of stars, dust & gas in space.

comet - body in orbit around the sun

universe - all existing things

solar system - assemblage of planets, & other bodies around the sun

constellations - an apparent grouping of stars, there are 88

Milky Way - faint band of light around the sky

asteroid - small objects in orbit between Mars & Jupiter

Locate them on the diagram below. Add items if you think they aren't drawn correctly.

BEST COPY AVAILABLE

name

Define these terms:

planet -

star -

galaxy -

comet -

universe -

solar system -

constellations -

Milky Way -

asteroid -

Locate them on the diagram below. Add items if you think they aren't drawn correctly.

TEACHER SHEET
SIXTH GRADE - UNIVERSE

This essay should point out that space is important today for use of communications and defense satellites. Space may be very important in the future especially if other planets are found to have metals or other various rocks and minerals that may be important on earth. The space station that they are planning to build will be used as a gathering station for any resources that will be mined on these other areas. Living out in space might also be an option in a few generations, if conditions here on earth somehow fail.

If you can find articles in the paper on space travel, assign them to your class to read first and then have them write the essay.

NAME _____

Write an essay on the importance of space. Try to answer the following questions: What is in space that might be important? Is there any special resources out in space? Can we live in space? Can we live on any other planet? Illustrate your essay with an appropriate drawing that captures a point that you are trying to make.

UNIVERSE CYCLE

NATURAL ENVIRONMENT

In order for all people to live in harmony with nature, we must understand the delicate and complex biological, physical and chemical systems in a world we share with all living and non-living things. The goal of this unit is to make children aware of the intricate balance which exists between all levels of life and more importantly, how any break or change of a "link" will affect the "chain" as a whole, include the human species.

LOWER PRIMARY

A. WHAT IS NATURAL? - Are natural things always good? What is an environment? What makes up a natural environment? How many types of natural environments are there?

B. WHO EATS WHO? - Are predators always large in size? What is a scavenger? Is there a sequence in the food chain?

UPPER PRIMARY

C. WHAT IS AN ECOSYSTEM? - Do certain groups of plants and animals live together? What is a "population" of organisms? What does a "community of living things" mean? What is the difference between a physical, biological and chemical environment? What relationships do these three environments have? Do communities of living things interact with the physical and chemical environment?

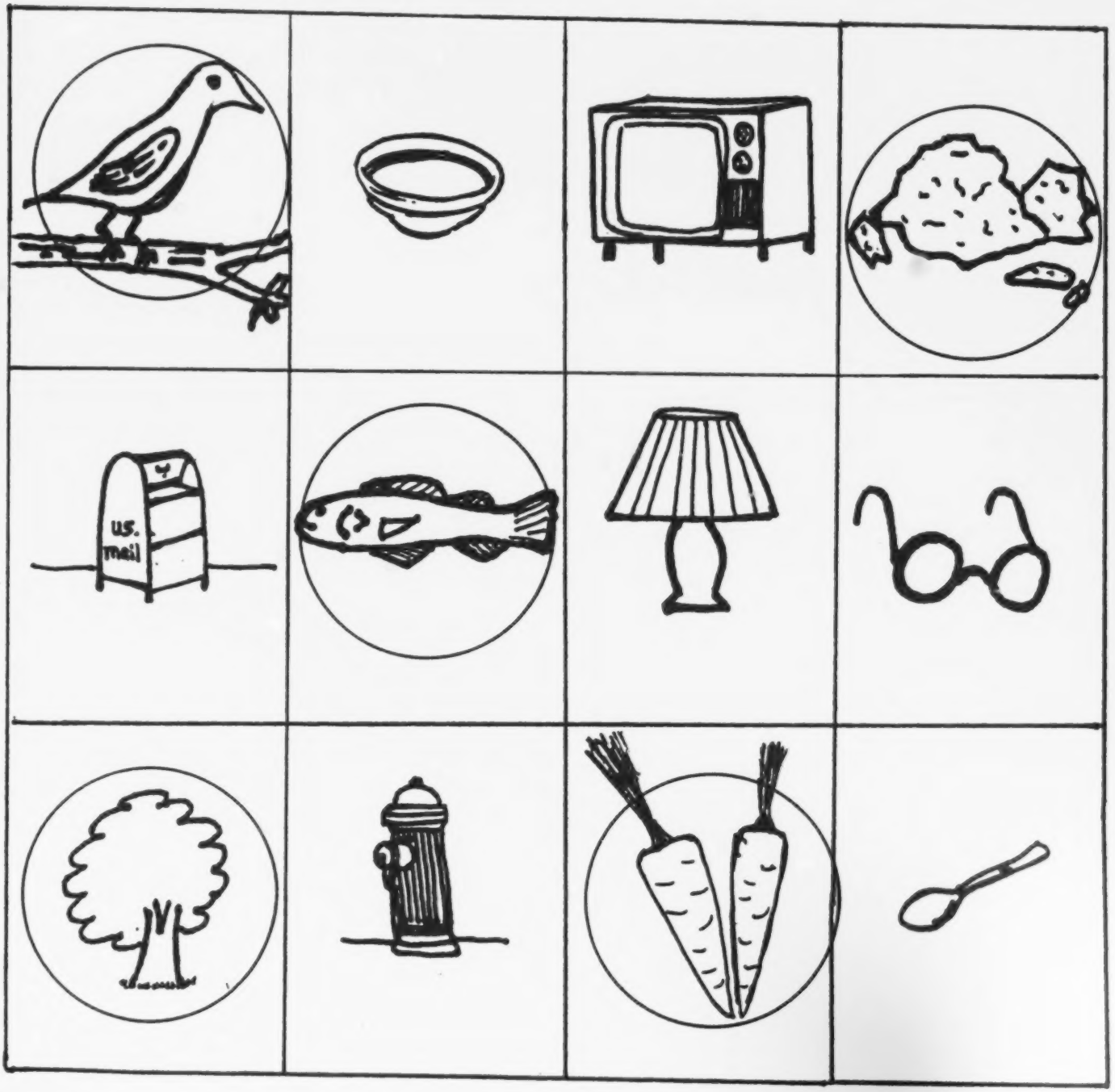
D. WHAT IS THE FOOD WEB? - Is it like a spider's web? What is the function of the food web? Is there more than one type? How big are food webs?

E. WHAT IS NATURAL SELECTION? - Can organisms change? Does change make a population better. What causes populations to change?

NAME Teacher Sheet

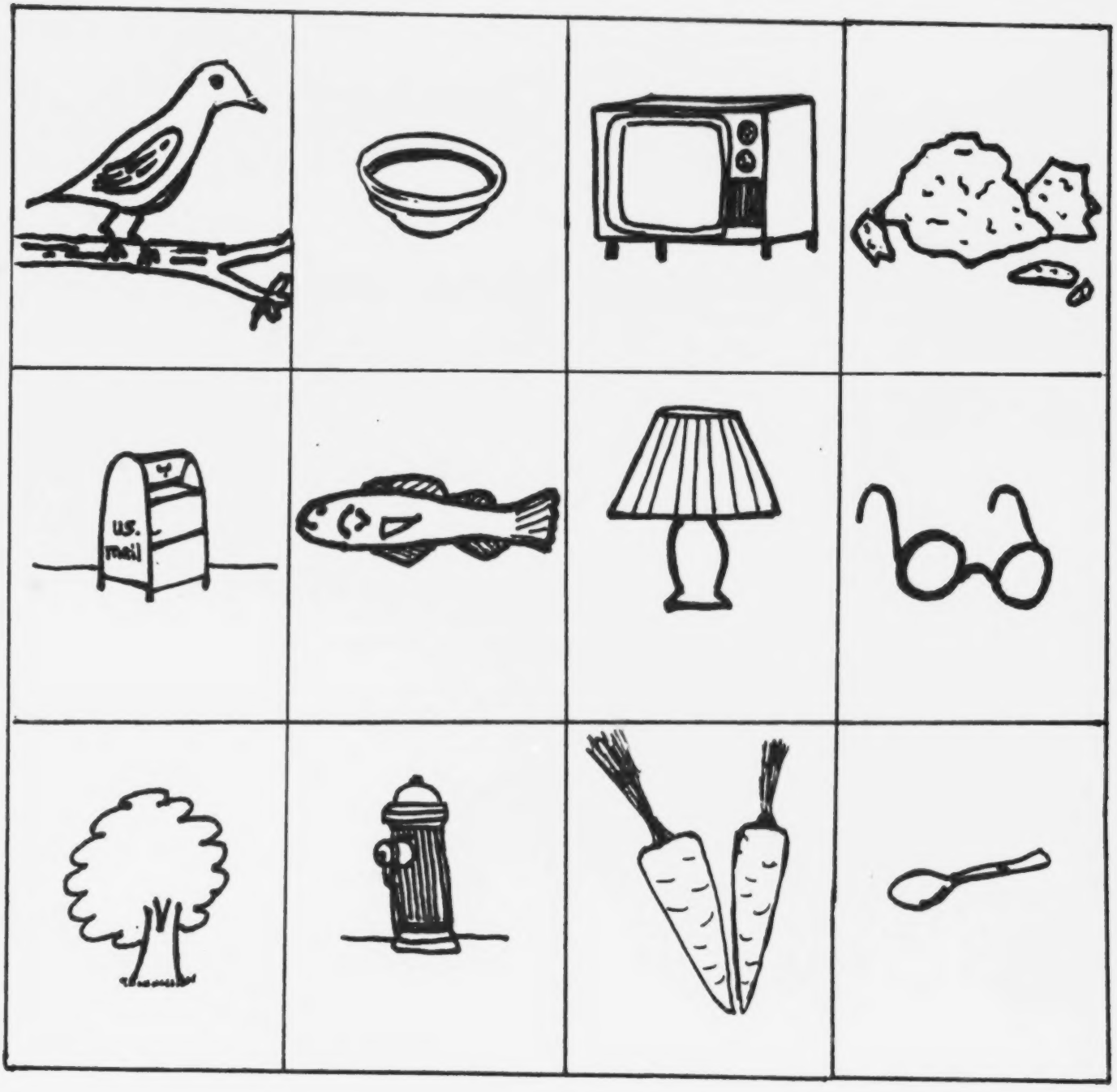
(Have students circle those items which are "natural" - those things found on earth in their pure unaltered state. For example: the mail box is derived from metals once in their natural or unaltered state, but has since been "changed" or altered to make a mail box for our use).

WHAT IS NATURAL ?



NAME_____

WHAT IS NATURAL ?



Teacher Sheet

(have childrn place the pictures in order starting from the bottom of the food chain, the "producers" and working their way up to the top of the food chain, the "consumers") The FOOD CHAIN is a general sequence of who eats who beginning with the plants and then smaller organisms that feed on plants such as small birds or rodents and then larger predatory animals which eat the "middle guy")

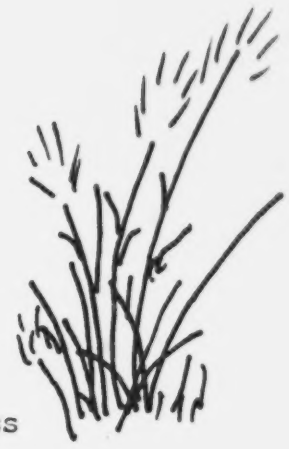
THE FOOD CHAIN

Problem # I

3

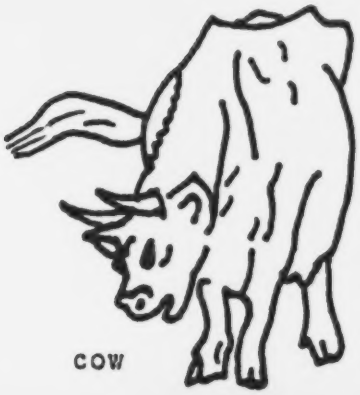
girl

1



grass

2



cow

Problem # II

2

squirrel

3

hawk

1

acorns

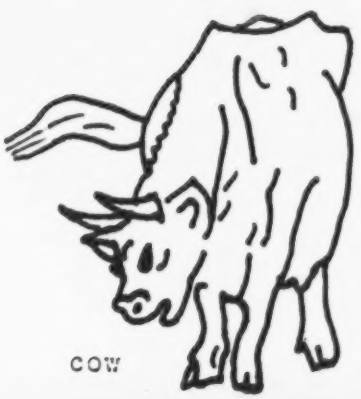
NAME _____

THE FOOD CHAIN

Problem # I

girl

grass



cow

Problem # II

squirrel

hawk

acorns

ECOSYSTEMS

Alone, the term environment means all the external factors affecting the life of an individual organism or a population of organisms. All living (plants & animals) and non-living (air, water & land) things are parts of the environment. Studying the whole environment at once is an emmense task, so the environment is broken into sections we call ECOSYSTEMS.

* An ecosystem is a group or community of living things interacting with one another and with their non-living surroundings.

An ecosystem can be as large as a forest, or as small as an aquarium. It can even be your classroom.

FOOD WEBS

The food web concept is an extension of the food chain. The food chain simply traces who eats who within an ecosystem (a community of organisms interacting with one another and with their environment). By itself, it does'nt give the whole picture of what is really going on in an ecosystem. Many animals feed on several different types of food - ie. humans eat several different kinds of plants and animals. Because of these more complex eating patterns, different food chains intermix and form a "web-like" pattern called the FOOD WEB.

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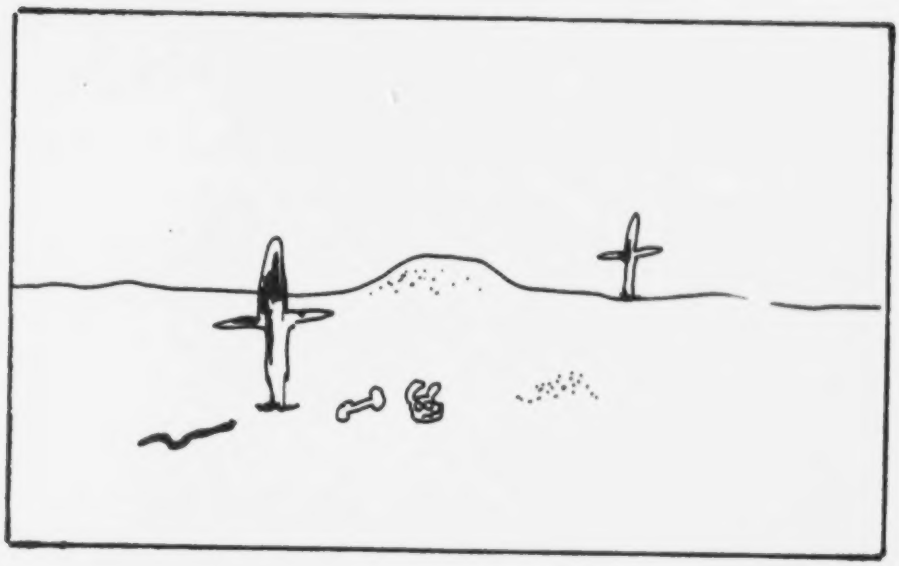
NAME teacher sheet

THE DESERT ECOSYSTEM



1. List all the living and non-living things you would expect to find in a desert ecosystem.

LIVING: snakes

cactus

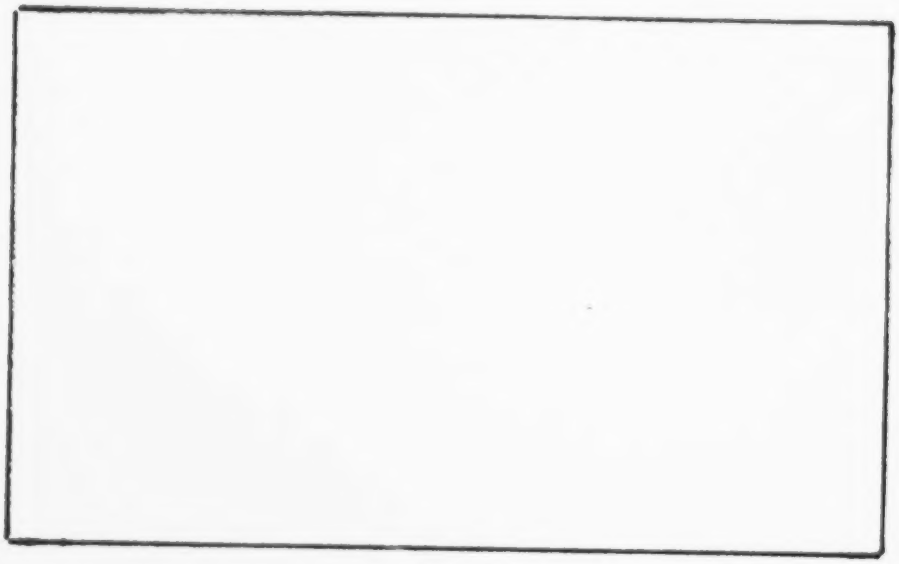
NON-LIVING: sand

bones

2. In the empty box above, draw in a desert ecosystem using all the items listed in number 1.

NAME _____

THE DESERT ECOSYSTEM



1. List all the living and non-living things you would expect to find in a desert ecosystem.

LIVING: _____

_____

_____

_____

NON-LIVING: _____

_____

_____

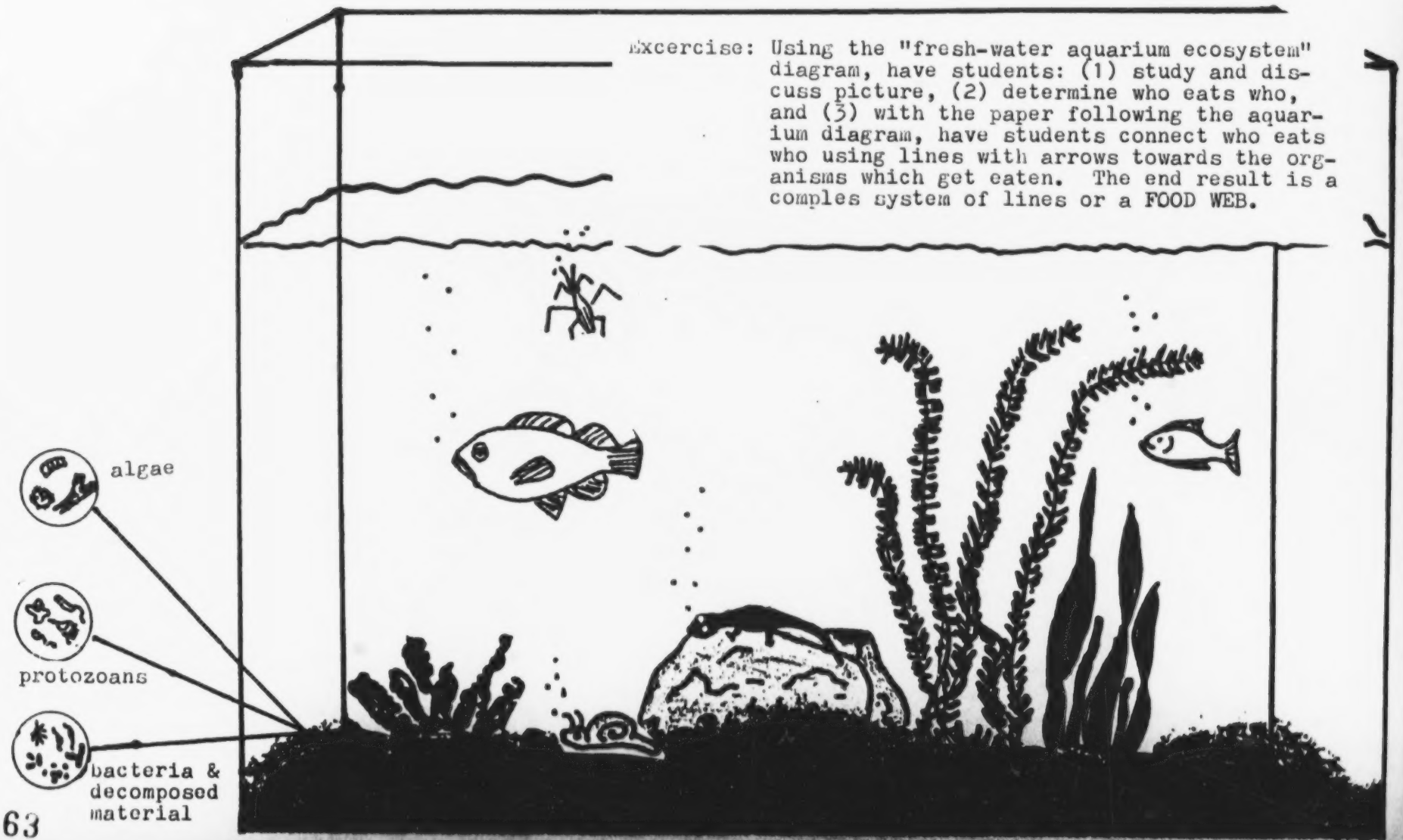
_____

2. In the empty box above, draw in a desert ecosystem using all the items listed in number 1.

NAME teacher sheet

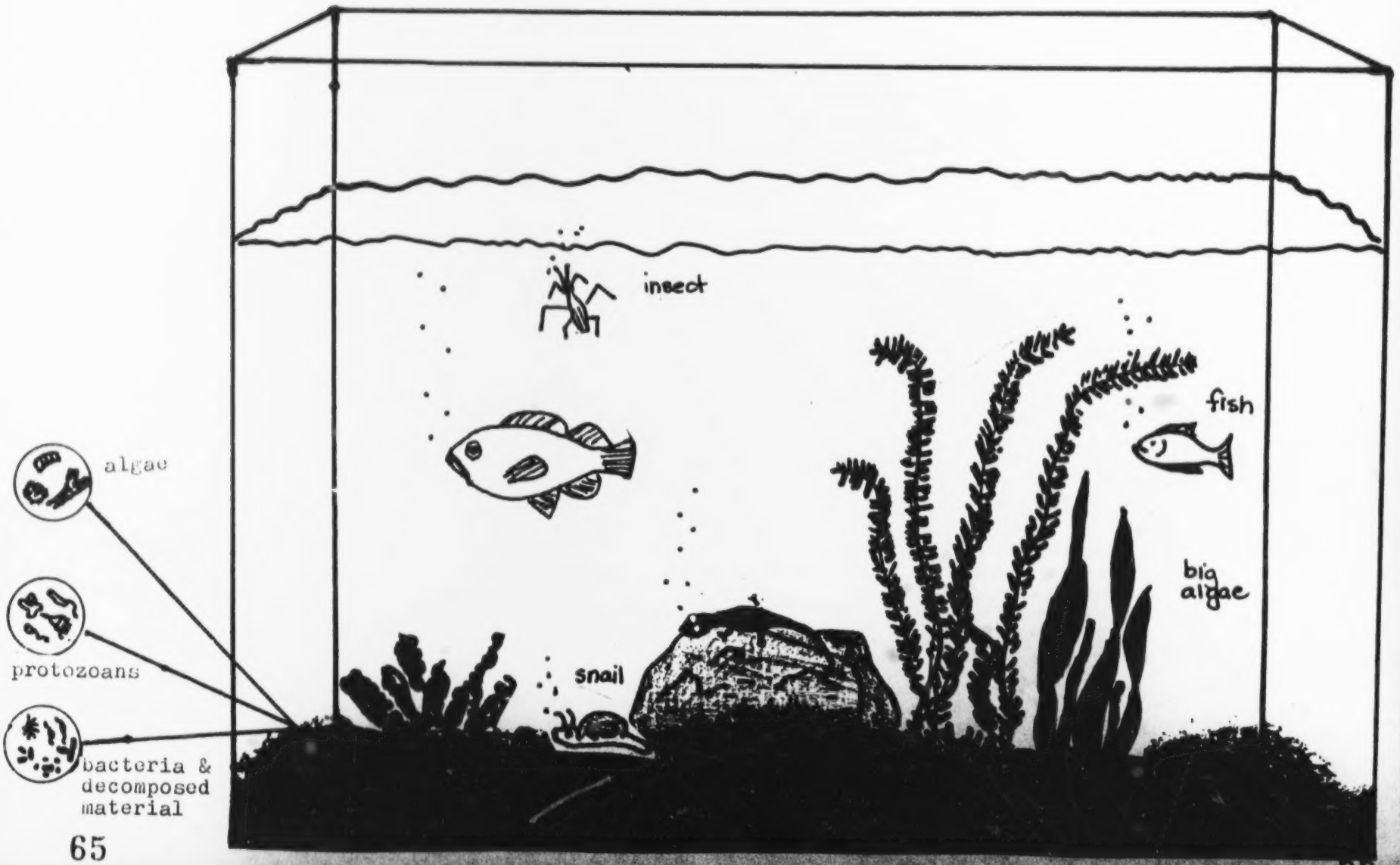
A FRESH-WATER AQUARIUM ECOSYSTEM

Excercise: Using the "fresh-water aquarium ecosystem" diagram, have students: (1) study and discuss picture, (2) determine who eats who, and (3) with the paper following the aquarium diagram, have students connect who eats who using lines with arrows towards the organisms which get eaten. The end result is a comples system of lines or a FOOD WEB.



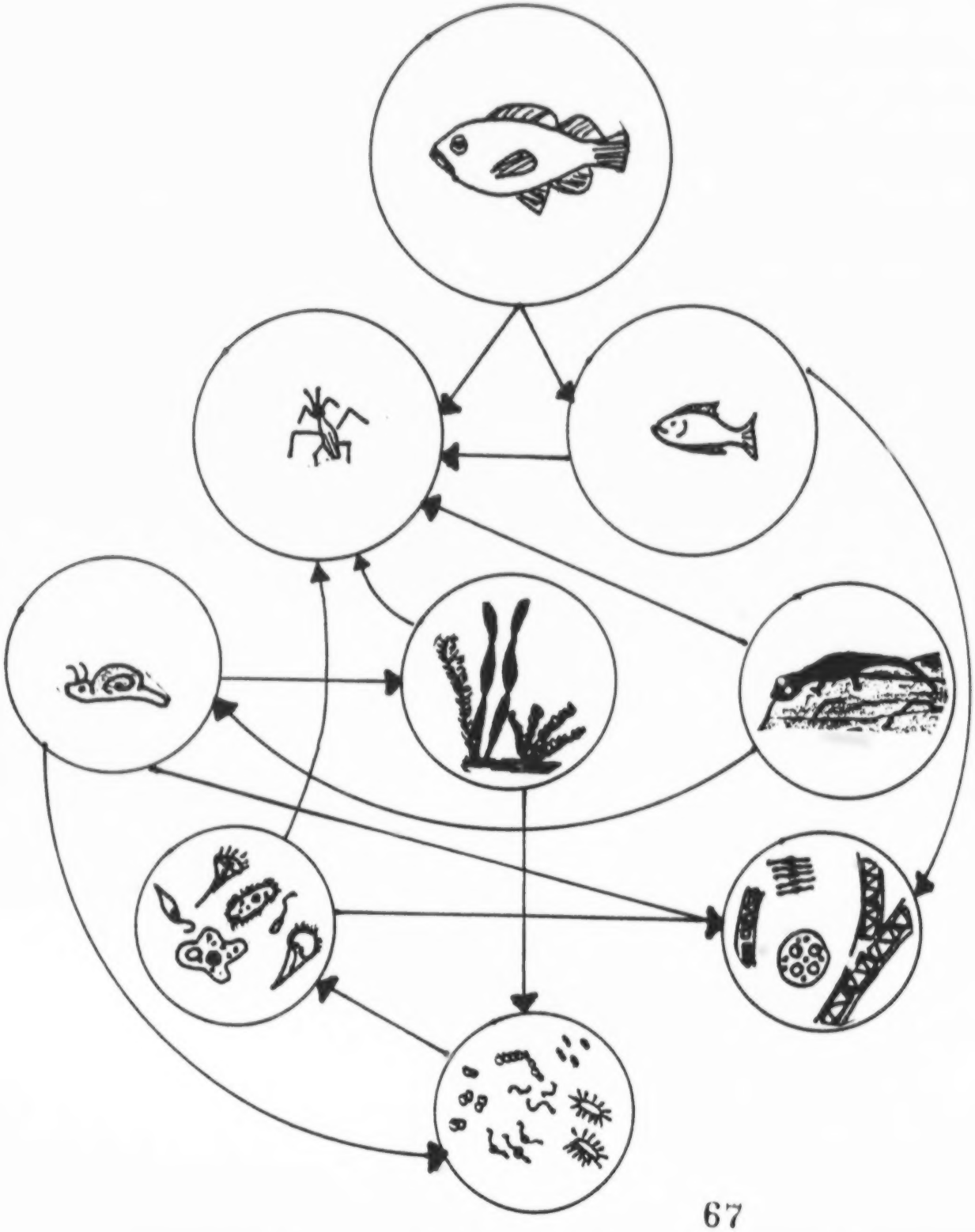
NAME_____

A FRESH-WATER AQUARIUM ECOSYSTEM



NAME Teacher Sheet

A FRESH-WATER AQUARIUM FOOD WEB



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Natural Selection

Thinking back to the fresh-water aquarium, imagine that something strange has happened. Imagine that the little protozoa had babies with "skin" so tough and hard like armor that nothing could eat them. Write a story telling how the once perfect ecosystem has been affected. What changes might occur.

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If the protozoa can't be eaten, then the entire food chain will be disrupted.

Protozoa will overtake the aquarium.